

CHAPTER 5

CONSULTATION & COORDINATION

MONTANA

CHAPTER 5: CONSULTATION AND COORDINATION

Introduction

The Montana Statewide Oil and Gas Environmental Impact Statement (EIS) and Amendment of the Powder River and Billings Resource Management Plans (RMPs) was prepared by an interdisciplinary team of specialists from the Bureau of Land Management's (BLM's) Miles City Field Office and Billings Field Office, the Montana State Office of the BLM, the State, and the consulting firms of ALL Consulting and CH2M HILL under contract to the BLM.

Consultation, coordination, and public involvement occurred during the process through public scoping meetings, informal meetings, individual contacts, newspaper releases, and *Federal Register* notices.

Preparation of the document began in January 2001. Data that was used came from inventories conducted before that time, from information received from the public and other agencies, and knowledge of the field office specialists.

Public Participation

A public participation plan was prepared to provide management and team guidance for developing the RMP EIS and Amendment, and to ensure public involvement during the entire document preparation process. During the scoping of the EIS, formal and informal public input was encouraged and sought.

A *Federal Register* notice was published on December 19, 2000, informing the public of the notice of intent to plan and announcing the notice of availability for the planning criteria.

Several news releases were published in local papers, announcing the beginning of the plan, encouraging public involvement, and publicizing the availability of the planning criteria.

Brochures were mailed to over 1,000 individuals, groups, and agencies in December 2000 notifying the public of the expected issues and upcoming public scoping meetings. A *Public Comment Summary and Recommendations Report* was prepared and made available electronically and in hardcopy in March 2001. This report summarizes the comments received from the public scoping meetings.

Public scoping meetings were conducted at five towns in the planning area with a total attendance of

329 people. Individual meetings were held with Crow and Northern Cheyenne Native American Tribes.

A total of 311 written communications, with more than 2,100 comments, were received after the public scoping meetings. Most of these written comments reiterated oral comments from the public meetings. Oral and written comments covered a spectrum of issues, but the majority were concerned with resource management of water, lands, air, and wildlife resources. The issues identified are presented in Chapter 1. Records of public comments and concerns are on file in the BLM Miles City Field Office.

In January 2002, approximately 1,500 copies of the draft RMP EIS and Amendment were distributed for public comment. Additionally, a copy was posted on the Montana Department of Environmental Quality's (MDEQ's) web site for public downloading. A *Federal Register* notice was published February 15, 2002, beginning the comment period on the draft. The comment period on the DEIS closed May 15, 2002.

Public hearings were held to gather comments on the draft RMP EIS and Amendment at six locations in the planning area.

PLACE	DATE	ATTENDANCE
Broadus	April 1, 2002	50
Billings	April 2, 2002	173
Crow Agency	April 3, 2002	48
Lame Deer	April 3, 2002	160
Helena	April 4, 2002	94
Bozeman	April 9, 2002	194
Total		719

Transcripts from the public hearings are available on the BLM Miles City Field Office Internet site at <http://www.mt.blm.gov/mcfo>.

What has Changed in Chapter 5 Since the Draft EIS?

Chapter 5 documents the public participation—as well as agency and tribal consultation and coordination—during the preparation of this Environmental Impact Statement (EIS). A detailed list of Tribal coordination dates and meetings is provided. The most significant addition is the list of the public's comments, along with the agency responses. Comments and responses are provided for each resource topic. To be consistent with the rest of the document, the resource topics are presented in alphabetical order.

Consultation with U.S. Fish and Wildlife Service on Threatened and Endangered Species

As required by Section 7 of the Endangered Species Act (ESA) of 1973, the BLM prepared and submitted a biological assessment to the U.S. Fish and Wildlife Service (FWS). This document defined potential impacts on threatened and endangered species as a result of management actions proposed in this RMP EIS and Amendment. A letter received September 4, 2002, from the U.S. Fish and Wildlife Service states:

“We concur with your determinations that the proposed action is likely to adversely affect the threatened bald eagle, and the proposed mountain plover. Although the BLM has determined that implementation of proposed changes in coal bed methane is likely to affect the black-tailed prairie dog (*Cynomys ludovicianus*), we concur with your determination that the action is not likely to adversely affect the black-footed ferret (*Mustela nigripes*).

“This concurrence is based upon the BLM’s commitments to 1) locate project activity to avoid impacts on prairie dog colonies that meet FWS criteria as black-footed ferret habitat (FWS 1989), 2) conduct ferret surveys in suitable habitat, following current lease stipulations for oil and gas development, and 3) if a black-footed ferret or its sign is found during a survey, all development activity would be subject to recommendations from the *Montana Black-footed Ferret Survey Guidelines, Draft Managing Oil and Gas Activities in Prairie Dog Ecosystems with Potential for Black-footed ferret Reintroduction* and re-initiation of Section 7 Consultation with the Service.

“The Service also concurs with your determination that the action is not likely to adversely affect the threatened Ute ladies’-tresses orchid (*Spiranthes diluvialis*), the pallid sturgeon (*Scaphirhynchus albus*), and the Montana arctic grayling (*Thymallus arcticus*). The Service gives its concurrence to BLM’s determination of “no effect” for the Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), interior least tern (*Sterna antillarum athalassos*),

and the warm spring zaitzevian riffle beetle (*Zaitzevia thermae*) (FWS 2002).

A copy of the letter is included in the Wildlife Appendix of the Final EIS (FEIS).

The following is a record of correspondence between BLM and the USFWS for section 7 consultation .

- 02/23/01 BLM Project Notification and Request for Species
- 04/20/01 USFWS Response to BLM Letter Dated 2/23/2001, Request for Species
- 02/08/02 BLM Request for USFWS Review of Draft Biological Assessment
- 04/10/02 BLM Request for USFWS Review of Biological Assessment and Initiation of Formal Consultation
- 09/10/02 USFWS Biological Opinion Issued to BLM

Consultation and Coordination with Native American Tribes

The following list includes BLM’s consultation and coordination efforts with the Tribes in preparing the draft and final EISs. The list does not include routine phone calls. For example, teleconference calls were held biweekly with the co-leads and cooperating agencies during preparation of the Draft EIS (DEIS) and monthly while preparing the FEIS.

Crow Tribe

- 02/28/01 EIS coordination meeting with the Crow Tribe in Crow Agency about tribal minerals.
- 06/12/01 EIS meeting with Crow Tribe and their lawyers to discuss the Memorandum of Understanding for becoming a Cooperating Agency.
- 10/24/01 Air and water teleconference call with co-leads and co-operators to discuss modeling.
- 04/03/02 Draft EIS public hearing in Crow Agency.
- 07/12/02 Meeting in Billings with Crow Tribe, Barrett Energy, and BLM to discuss development agreement and the Crow Tribe’s development plans.

- 08/08/02 EIS consultation meeting with BLM in Billings to discuss the EIS and their narrative report.
- 11/02/02 Preliminary Final EIS meeting with the BLM and Crow representatives to discuss tribal comments.

Northern Cheyenne Tribe

- 02/14/01 EIS meeting in Billings to discuss the draft Memorandum of Understanding for the tribe to become a Cooperating Agency.
- 04/10/01 EIS coordination meeting in Lame Deer.
- 04/27/01 Coordination meeting with Northern Cheyenne and BIA in Billings to discuss water rights.
- 06/14/01 Teleconference call with Northern Cheyenne and BIA on Memorandum of Understanding for the EIS.
- 07/25/01 EIS consultation meeting in Lame Deer at the BIA office.
- 07/30/01 EIS coordination meeting in Billings Northern Hotel with the Northern Cheyenne Tribal Council, BLM, and BIA.
- 07/31/01 Teleconference call to discuss the ethnographic contract with BIA and the Northern Cheyenne tribal attorney.
- 08/01/01 Teleconference call with Northern Cheyenne, contractors, U.S. Environmental Protecting Agency (EPA), U.S. Geological Survey (USGS), BIA, MDEQ, Montana Bureau of Mines & Geology (MBMG), and ALL Consulting to discuss water methodology.
- 09/03/01 EIS consultation meeting with the Northern Cheyenne.
- 09/24/01 EIS meeting with the Northern Cheyenne attorney in Billings.
- 10/02/01 EIS meeting in Billings with the Northern Cheyenne Tribe, Crow Tribe, MDEQ, Montana Bureau of Oil & Gas Conservation (MBOGC), and BIA to discuss Chapters 3 and 4 and mitigation measures.
- 10/03/01 EIS meeting to continue discussion on Chapters 3 and 4 and mitigation measures.

- 10/24/01 Teleconference call with co-leads and co-operators to discuss air and water modeling.
- 04/03/02 Draft EIS public hearing in Lame Deer.
- 04/30/02 EIS consultation meeting in Lame Deer.
- 05/10/02 EIS consultation meeting in Billings.
- 06/07/02 EIS meeting in Billings with Northern Cheyenne and BLM's Montana State Office to discuss narrative report and mitigation appendix.
- 06/20/02 Meeting in Billings with Northern Cheyenne and BLM's Washington, D.C. Office to discuss Northern Cheyenne's concerns regarding water quality and methane development in Montana and Wyoming and its effect on tribal assets.
- 08/27/02 Coordination meeting in Billings to discuss Northern Cheyenne mitigation options.
- 11/02/02 Preliminary Final EIS meeting with the BLM and Northern Cheyenne to discuss tribal comments.

The Lower Brule Tribe from South Dakota also expressed concerns after the DEIS was released to the public for review. BLM met with tribal representatives in Billings on August 14, 2002, to discuss their concerns and the preparation of the preliminary FEIS.

Consistency

The BLM's planning regulations require that resource management plans "be consistent with officially approved or adopted resource related plans, and the policies and programs contained therein, of other Federal agencies, State and local governments, and Indian tribes, so long as the guidance and resource management plans are also consistent with the purposes, policies, and programs of Federal laws, and regulations applicable to public lands...." (43 CFR 1610.3-2)

All federal, state, and local agencies and Tribal councils have been requested to review this document and inform the BLM of any inconsistencies with their plans.

The Montana Governor's clearinghouse will be supplied with copies of the final document for review to ensure consistency with the state's plans.

Comments and Responses

The BLM, MDEQ, and MBOGC received more than 18,000 e-mails, faxes, letters, cards and oral statements during the public comment period. Of those, approximately 8,800 commented on the Montana EIS, while the remainder commented on the Wyoming EIS. The Wyoming comments were forwarded to the BLM field office in Buffalo, Wyoming, for consideration.

From the 8,800 Montana communications, more than 25,000 comments were made on the DEIS. In preparing the FEIS, approximately 75 percent of those comments were used to accomplish the following:

- Modify analysis
- Develop and evaluate analysis not previously considered by the agency
- Supplement, improve, or modify the analysis
- Make factual corrections
- Explain why the comments do not warrant further agency response

The remaining comments expressed a preference or opinion that did not affect the analysis. These were carefully considered in the decision-making process for developing the FEIS. Records of all comments are available at the BLM Miles City Field Office.

Comments that were incorporated into this analysis for the FEIS are included in this chapter, grouped by topic area. Comments that addressed multiple topics were placed under the predominant concern or issue. In the comments the word “Chapter” refers to “Chapters in the DEIS.” **Any comment that contains a reference to a specific page, table, map, or figure refers to the DEIS document.** Each comment is then followed by a discussion or response. Responses refer to the FEIS. Text revisions to the FEIS often were considered to be the appropriate response, and this is noted where applicable.

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Comments and Responses

Comment 1 (C-1): The Environmental Protection Agency, Region 8, Denver, Colorado Office has not

rated the Draft EIS with regards to the potential environmental impacts because, in their opinion, the document does not present sufficient information to understand the impacts of the Preferred Alternative. However, the EPA has issued a rating regarding the adequacy of the information provided in the Draft EIS. The rating attached to this issue is category 3 (Adequacy of Impact Statement–Inadequate). The basis for the EPA rating is the lack of specifically identified, economically and technically feasible water management practices for each watershed that are adequate to assure attainment of water quality standards under the Clean Water Act.

Response 1 (R-1): The FEIS has been augmented with a water management table and a new section under each alternative to outline the number of potential management facilities required in each watershed. Each management option is currently being used in the region and therefore is technically achievable and fiscally operational.

C-2: Previously issued gas leases in the Powder River Basin, which were analyzed using BLM’s existing land use plans under the National Environmental Policy Act (NEPA), are moot because BLM’s field offices “rely on outdated environmental reviews that predate coal bed methane” and are now judged invalid based on a ruling by the Interior Department’s Board of Land Appeals favoring a claim by the Wyoming Outdoor Council (*Billings Gazette*, May 4, 2002). BLM should have considered leasing decisions and stipulations for CBM development in the DEIS.

R-2: The BLM completed the *Miles City District Final Oil and Gas RMP/EIS Amendment* in December 1992 and completed the Record of Decision (ROD) for this RMP/EIS in February 1994 (1994 Amendment). The 1994 Amendment was developed to make sure BLM’s oil and gas leasing program was in compliance with *James R. Conner, et al. v. Robert Burford, et al.* No. 85-3929, Ninth Circuit. A deliberate effort was completed (September 1990 Coal Bed Methane Management Situation Analysis Document) to consider coal bed methane (CBM) development activities as part of the Reasonably Foreseeable Development (RFD) scenario used to analyze the impacts of leasing federal oil and gas estates. A limited level of CBM exploration and development activity was included in the RFD for the 1994 Amendment based on existing and anticipated CBM activity in Wyoming and Montana. The 1994 Amendment clearly recognized that more analysis would be required before large-scale development of CBM could be approved. This statewide EIS meets the requirements identified in the 1994 Amendment. The Interior Board of Land Appeals decision applies to three leases in Wyoming.

C-3: The Park County Commissioners and numerous residents request the BLM consider completing a supplemental EIS on CBM development in the Bozeman Pass area of Park and Gallatin counties. There is concern that the DEIS does not adequately address the possible impacts and mitigation of those impacts as they relate to the Bozeman Pass area. Bozeman Pass is different geologically, hydrologically, socially, and economically from the Powder River area and should be studied as a separate entity.

R-3: The planning level analysis conducted for this EIS is statewide. The State will require that site-specific impacts in the Bozeman area be addressed when a company makes an application for wells on state minerals. BLM does not anticipate any federal wells being drilled.

State agencies agree that any Montana Environmental Policy Act (MEPA) review document prepared for the development of a CBM production project in the Bozeman Pass area will address site-specific information about Bozeman Pass or similar areas in Park and Gallatin counties. The agencies note that other areas of the state may also require an additional detailed site-specific environmental documentation, including EISs, following agency preparation of MEPA and National Environmental Policy Act (NEPA) screening documents for site-specific proposals.

C-4: The DEIS does not seriously consider alternatives to conserve energy that would render the need for CBM development unnecessary. Such alternatives could include ways to develop more fuel-efficient automobiles and a focus in energy policy on renewable resources like wind, solar, super insulation, geothermal, and photo voltaics. We should be looking into other renewable alternatives for energy production.

R-4: The purpose and need for the document is to analyze the effects from CBM and conventional oil and gas development (see Chapter 1 under Purpose and Need). Alternative management to existing management must meet the Purpose and Need for completing the plan. See Chapter 2 in the section Alternatives Considered But Not Analyzed in Detail for a full explanation.

C-5: The nine studies omitted from the DEIS are critical to understanding the impacts of CBM. These studies must be made available for public review and comment. It is vital that development be postponed until all studies necessary for the analysis are completed.

R-5: The Ethnographic Study, Air Modeling, 3-D Groundwater Model for Hanging Woman, and the two tribal reports from the Crow and Northern Cheyenne tribes have been completed and are summarized and referenced in the FEIS. These studies are available on the BLM and MDEQ CBM web sites. When information from any study becomes available, the RMPs are reviewed to determine if the new information warrants a change to the plan. The results of the studies have been considered in the FEIS analysis for the level of development considered.

C-6: Because the two BLM EISs for Montana and Wyoming were not combined, they do not reflect the real impact to the Powder River, Tongue River, and Yellowstone River drainages.

R-6: The cumulative impacts on shared rivers (Tongue, Powder, and Little Powder rivers) from Wyoming and Montana CBM development was considered in the surface water quality model as presented in the FEIS Hydrology section of Chapter 4. Additionally, Montana and Wyoming developed a state-to-state Water Management Agreement for water discharges, which is presented in the Hydrology Appendix.

C-7: Why were the two draft EISs—for Wyoming and Montana—not combined into one analysis? Agencies violated NEPA by failing to consider connected, similar, and cumulative actions in the same NEPA document.

R-7: The BLM considered the option of completing a single EIS for Wyoming and Montana. However, the proposed development of CBM in Wyoming and CBM predictions in Montana was not evaluated in a single NEPA document for many reasons. The purpose of and need for the proposed actions in Wyoming and Montana differ substantially. The analysis documented in the Wyoming EIS responds directly to a Proposed Action submitted by oil and gas companies. BLM in Montana received no Proposed Action from oil and gas companies and is completing the EIS to plan for potential development proposals. The Montana EIS is designed to meet the requirements of MEPA and the analysis area is more than just the PRB. By preparing two EIS documents, the differences in proposed actions and state requirements could be dealt with in a more specific fashion, resulting in impact analyses that are clearer and state applicable. When the appropriate area for the analysis of cumulative effects includes Wyoming, or other states, the EIS includes such analysis and considers the CBM development activity forecast in Wyoming.

C-8: The DEIS only analyzes CBM activities and not conventional oil and gas activity.

R-8: Conventional oil and gas development is analyzed in the DEIS. During the scoping period for the DEIS,

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conventional oil and gas was not raised as an issue. Therefore, no alternatives for conventional oil and gas were developed. One can find conventional oil and gas and its analyses under the Management Common to All Alternatives sections in Chapters 2 and 4. Impacts from conventional oil and gas are also analyzed as part of the cumulative impact analysis at the end of each resource topic discussion in Chapter 4.

C-9: The EIS purports to be a statewide planning document for the State for management of its CBM resources. Yet the document contains little information and analysis about any areas beyond the 16-county CBM emphasis area.

R-9: The EIS emphasizes the 16-county area because that is the area, or affected environment, with the highest CBM development potential. The planning level decisions are applicable to other areas with CBM development outside of the emphasis area. Emphasizing this known development area allows for evaluating the majority of circumstances that will be encountered during development.

C-10: MEPA disallows the revision, the issuance of supplemental information, or the drafting of additional chapters, which are intended to “fix” a faulty document “after the fact” for inclusion in a final EIS.

R-10: Changes include clarification of the preferred alternative and accompanying analyses. A certain level of change is expected between the draft and final as part of the MEPA process.

C-11: One flaw in the analysis is the lack of a “no action” alternative for CBM activities; all alternatives provide for CBM activities at some level, from test wells to full-field development.

R-11: The “no action” alternative in the document is Alternative A—No Action (Existing Management). Areas where oil and gas development are not allowed were considered and analyzed in past planning documents, including the 1994 Oil and Gas Amendment and the 1999 Area of Critical Environmental Concern Amendment.

C-12: The EIS is inadequate because it doesn’t meet the requirement for agencies not to make unsupported conclusions and assumptions regarding impacts without referencing the data and rationale supporting such conclusions and assumptions.

R-12: Where information is lacking, assumptions must be made in order to analyze predicted impacts. Assumptions used in the EIS were developed by the

BLM and State professionals’ best judgment and experience, and from existing data and information. The assumptions, analyses and impacts will be monitored to determine if they are correct. Adjustments to planning decisions and management actions will be made as needed from the monitoring data.

C-13: Agencies don’t meet NEPA requirements by deferring site-specific analyses of environmental impacts to later stages of development when it is possible to evaluate those impacts at the present time.

R-13: The EIS analyzes potential impacts from typical actions associated with CBM activities that may occur. The analysis is designed to provide the decision makers and the public with an understanding of the potential consequences and impacts on the environment from implementing certain management actions. Site-specific analyses will be conducted for site-specific project proposals.

C-14: A federal policy addressing the Missouri Breaks River National Monument states, “All federal lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, leasing, and patent undermining laws from disposition under all laws relating to mineral and geothermal leasing subject to valid existing rights.” Why doesn’t the EIS address this federal policy?

R-14: The referenced federal policy applies only to the Missouri Breaks National Monument. The monument is outside the federal planning area of this EIS. Conversely, decisions and management actions that result from this EIS will not apply to federal lands within the Missouri Breaks National Monument.

C-15: Loss of forest on the Northern Cheyenne Reservation could cause one of the Northern Cheyenne Tribe’s major funding sources to lose an annual average of \$570,000 from stumpage payments. This could affect the tribal budget for employment, operating costs, and services to the tribal membership. It also could mean an annual average loss of \$600,000 for our tribal forestry program. The tribe’s sawmill and the Tongue River Lumber Company could also be highly affected, both by reduced income and employment.

R-15: The analysis in the EIS does not show any direct or indirect impacts to Northern Cheyenne Tribe’s forest, logging program or sawmill operation.

C-16: Will there be times during high fire danger when no CBM activity should take place, and who will determine this?

R-16: During times of extreme high fire danger, the federal agencies and the State have placed restrictions,

including closures, on all activities that may start fires. CBM operators would need to comply with these restrictions or operating requirements.

C-17: What steps would be taken to prevent the hazards associated with CBM from occurring, and what agency would be responsible for enforcing those measures?

R-17: Agencies with permitting authority and responsibility, such as BLM, Montana Board of Oil and Gas Conservation and Montana DEQ, would impose operating requirements as part of approved permits. The operating requirements represent Best Management Practices (BMPs) and mitigation measures designed to minimize or eliminate hazards associated with CBM operations. The EIS contains many of the BMPs and mitigation measures the agencies and companies could choose from to address the hazards. The agencies would conduct inspections to determine compliance, evaluate the effectiveness of BMPs and mitigation measures, assess impacts and require changes in operations as needed based on information gained from the inspections.

C-18: Will any fire related to CBM activities be the liability of the operator? How will this be enforced in terms of compensation to landowners, county fire departments, and local governments for fire suppression on CBM-related fires? Are the developers required to have insurance to cover this?

R-18: Current laws and regulations have provisions for requiring fire suppression cost reimbursement from anyone who can be proven to have started a wildfire. CBM operators are not exempt from these provisions. CBM developers are not required to obtain any additional fire insurance beyond that required for a conventional oil and gas operator.

C-19: The development of CBM in southeastern Montana has the potential to severely impact the physical, social, fiscal, and cultural environment of the reservation. The Northern Cheyenne Tribe does not feel that the DEIS adequately addresses these impacts in a responsible manner, nor does it offer any form of responsible mitigation to alleviate or prevent these impacts.

R-19: The Final EIS includes information provided by the Northern Cheyenne Tribe. See Chapters 2, 3 and 4 and the Northern Cheyenne Mitigation Appendix.

C-20: None of the alternatives analyzed in detail in the DEIS includes orderly, phased development of CBM wells. Phased development involves the

concept of clustering development geographically to maximize and allocate the recovery of resources and use a common infrastructure. Clustered development facilitates an increase in planning over larger areas and may facilitate injection of CBM-produced water into depleted portions of the same aquifer. Phased development also should involve developing one coal seam at a time

R-20: The Alternatives were developed based on the purpose and need of the EIS and the scoping comments submitted by the public. Many of the points, such as minimizing surface disturbance, reclamation, protecting wildlife and habitat, and surface owner agreements, are addressed in the EIS. Other points, such as bonding and certain methods of phased CBM development, were not analyzed in detail for reasons presented in Chapter 2, Alternatives Considered but not Analyzed in Detail.

C-21: BLM should develop and adopt an alternative that provides for the following:

- Effective monitoring of CBM development and active enforcement of existing laws
- Use of aquifer recharge, clustered development, and other best-available technologies to minimize and avoid impacts
- Collection of thorough and up-to-date inventories of fish, wildlife, and plants to ensure they are adequately protected, coupled with the use of phased development so that impacts are diffused
- Complete reclamation of all disturbed areas, which should be ensured by adequate bonds

Furthermore, BLM should provide for meaningful public involvement, including the involvement of private surface owners where the underlying minerals are owned by the federal government, and thoroughly consider and respond to the comments received.

R-21: The bulleted items are address throughout the Alternatives analyzed in the EIS. They will be analyzed in more detail when the agencies review specific project proposals. The private surface owners will be invited and encouraged to participate in the development and review of project plans.

C-22: The agencies should develop an alternative based on the Northern Plains Resource Council's proposal for responsible CBM development, *Doing It Right*. Alternatives should include phasing in development over time, minimized disturbance of wildlife habitat, and surface use agreements.

R-22: See **R-20** and **R-21** above.

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C-23: No public hearings were held in Bozeman.

R-23: The MDEQ held a public hearing in Bozeman on April 9, 2002, to address citizen concerns within the area.

C-24: A site-specific EIS should be completed for each area of potential impact.

R-24: During review of specific project proposals, the BLM will use the NEPA screening process and MBOGC will use the MEPA screening process to determine if an EIS is needed to prepare the environmental analysis.

C-25: The size of the EIS precludes most citizens from reading it. It is unrealistic to expect citizens to read such a document, especially when this is only one issue (and one EIS) that affects our lives. I strongly recommend that you produce a small summary document that is widely distributed and make the technical EIS available to those who ask for more information.

R-25: A summary document has been prepared and included with the Final EIS. The summary document is also available separately.

C-26: The DEIS fails to adequately address the fact that several units of the National Park Service are located in the planning area. The DEIS should state specifically that no lands in any National Park Service unit in Montana will be considered in future federal oil and gas development.

R-26: The EIS defines in Chapter 1 the planning area for both the BLM and State and outlines their jurisdictions with respect to administering CBM development activities. Except for cumulative effects, the plan does not cover lands administered by the National Park Service.

C-27: The Lower Brule Sioux Tribe is requesting a 60-day extension to the May 15 deadline for comments on the DEIS.

R-27: The 90-day comment period was not extended.

C-28: The DEIS does not mention increasing energy demands of the United States and the related strategic necessity of a strong domestic energy supply.

R-28: Discussion or analysis of increased energy demands, the need for a strong domestic energy supply, and the relationship to strategic national concerns are not part of the purpose and need for this EIS and are beyond the scope of the document.

C-29: The Northern Cheyenne Reservation comprises approximately 2 percent of the planning area. Does

this mean the statewide “Planning Area” or the “Emphasis Area” where the anticipated CBM development will occur?

R-29: The Northern Cheyenne Reservation is not part of the planning area for which the BLM and MBOGC will be making development decisions. See Planning Areas description in Chapter 1. Wells are predicted on the reservation so cumulative effects can be analyzed.

C-30: Your studies need to thoroughly investigate the geographical positions of the mining activities.

R-30: The geographical and contextual locations of the regional coal mines are included in the existing environment description found in Chapter 3. Chapter 4 includes a discussion about potential impacts to the coal mines from CBM activities.

C-31: If BLM’s planning area is the Powder River RMP and Billings RMP, the DEIS should disclose the reasons for selectively including information about the Fort Belknap Community Council and Turtle Mountain Public Domain allotments.

R-31: Fort Belknap Community Council and Turtle Mountain Public Domain allotments were included in Chapter 3 in the Indian Trust Assets discussion because of the BLM’s trust responsibility and obligation to determine if any impacts would occur on or to these properties from developments predicted in the planning areas.

C-32: Does the term “cooperator” have the same meaning as “cooperating agency”?

R-32: Yes. Cooperating agencies are official participants in the EIS process and have signed a Memorandum of Understanding with the BLM regarding their involvement. Cooperators as used in the context of this EIS is referring to those agencies.

C-33: The discussion of the planning area should identify the Crow and Northern Cheyenne reservations as sovereign planning areas, and the Crow and Northern Cheyenne tribes as sovereign governments with jurisdiction (i.e., authority and responsibility) over their territories.

R-33: The State and the BLM recognize the sovereignty of the Tribes and their reservations as stated in Chapter 1 and Chapter 3 of the Final EIS. The EIS states that the planning area excludes those lands administered by the Crow and Northern Cheyenne and any other Native American lands from the scope of the decisions resulting from this process. The reservations are included in order to assess potential impacts from CBM activities located off of the reservations and to include potential impacts

from possible CBM activities on the reservations as part of the cumulative impact analysis.

C-34: Reference is made to the 1994 Oil and Gas Amendment of the Powder River Basin and South Dakota RMPs in Chapter 1. Following this is the BLM 1991 citation, apparently referring to the 1994 Amendment. Is the citation correct? The reference (BLM 1992) falls at the end of this section.

R-34: A 1991 citation in Chapter 1 could not be found. The draft amendment to the original Powder River and Billings RMPs was completed in 1992, while the ROD for these actions was not issued until 1994.

C-35: The Crow Tribe recommends BLM, the MBOGC, MDEQ, and Montana Department of Natural Resources and Conservation (DNRC) include maps displaying ownership of surface and mineral rights.

R-35: Mineral ownership maps are part of the FEIS and RMP amendments issued in 1992 (BLM 1992). Maps are also available at the BLM Miles City Field Office and the Billings State Office.

C-36: Would the Omega alternative be expected to have different production efficiencies or surface impacts than the alternatives studied in detail?

R-36: The Omega alternative was not operational either as a demonstration or a pilot test at the time it was proposed. Therefore, the performance data could not be studied for inclusion in the EIS.

C-37: Why is the BLM's *Big Dry Resource Management Plan/Environmental Impact Statement* cited in this document? The only reference in the DEIS is Chapter 2, Pages 2-3 and 2-6.

R-37: As stated in Chapter 2, the steps BLM requires for obtaining approval to drill and conduct surface operations are summarized in the Big Dry RMP/EIS, Appendix A.

C-38: Obviously, not every well can be drilled at the same time. Therefore, no special effort needs to be made to phase in development. Landowners and mineral owners should have control of the timing and methods of development of their land.

R-38: Many different and sometimes competing factors affect the timing and methods of developing oil and gas resources. The needs of the surface and mineral owners should be given consideration by companies as they prepare plans for lease operations. A mineral owner can include requirements or restrictions on mineral development as terms of the

lease. The surface owner can include requirements or restrictions as terms of the Surface Owner's Agreement with the company.

C-39: Because this document purports to be an amendment to the Powder River and Billings RMPs, will notice of this proposed amendment be sent to all the grazing permittees and others who commented on the previously adopted RMPs?

R-39: The mailing list was prepared using permittees, staff mailing lists and local news releases.

C-40: Will CBM operators be required to complete a Toxics Release Inventory Report?

R-40: Toxic Release Inventory reports will not be required from CBM operators. However, all spills of controlled substances are required to be reported immediately to the EPA, State, BLM, FWS, and local authorities.

C-41: The EIS mentions a Water Management Plan. Where can one receive a copy of the plan? Who is going to develop this Water Management Plan and will the public be allowed to comment on it?

R-41: Water Management Plans will be prepared by CBM operators for each project and will include watershed analysis for affected watersheds. The BLM and the MBOGC will review and approve these plans. Affected landowners will be invited to participate in the process.

C-42: Will all of the verbal comments given at the various public hearings and recorded by the court reporter be reproduced in the FEIS?

R-42: Comments received at the public hearings have been incorporated into the Comments and Responses section of Chapter 5 and organized according to resource topic. Copies of the six public hearing transcripts, as well as the MDEQ General Discharge Permit, can be viewed on the BLM and MDEQ CBM web sites.

C-43: Are the BLM and other federal agencies complying with Presidential Executive Order 13212 entitled "Actions to Expedite Energy Related Projects"?

R-43: The review of proposed energy projects within mandated timeframes by federal agencies is a high priority, although other responsibilities and capabilities affect an agency's ability to respond to project proposals. While the referenced Executive Order directs federal agencies to expedite reviews and approvals of proposed energy projects, the Order also instructs agencies to maintain safety, public health and environmental protections.

CHAPTER 5

Alternatives and Other Management Concerns

C-44: There should be a large buffer zone near reservation lands, which clearly wasn't detailed in your document. The document only states that there would be no buffer zone near reservations.

R-44: A buffer zone was considered in Alternatives B and D. The Preferred Alternative (E) does not recommend a buffer zone because land ownership is mostly private. The BLM has developed several mitigation measures to protect tribal assets. See Chapter 2 under the Preferred Alternative and the Northern Cheyenne Mitigation Appendix.

C-45: The BLM should represent our environment and its residents, not narrow self-oriented people and corporations.

R-45: The Federal Land Policy and Management Act of 1976 directs BLM to manage public lands on the basis of multiple use and sustained yield unless otherwise specified by law. While BLM must preserve and protect certain public lands, it is also mandated to manage the public lands recognizing the Nation's need for domestic sources of minerals, food, timber, and fiber. BLM has prepared the EIS with public input, including local, regional and national. Our overall goal is to develop CBM in an environmentally sound manner.

C-46: We are concerned that the DEIS has not given enough consideration to how the proposed development will affect the region's biodiversity.

R-46: The effects on regional biodiversity have been addressed in consultation with the FWS and its conclusions as presented in the Biological Opinion found in the Wildlife Appendix.

C-47: Alternative E leaves too much to industry for deciding an acceptable price to pay for environmental degradation.

R-47: Although industry can propose mitigation measures in their Project Plan and discuss how their proposals may reduce or eliminate impacts, it's ultimately the decision of the BLM and MBOGC to approve these plans and ensure that development actions comply with the given lease stipulations and permit requirements.

C-48: The EIS is incomplete because it does not include numeric standards.

R-48: The MDEQ has specific requirements for developing numeric standards that are not done in an EIS. The MDEQ is currently developing total maximum daily loads (TMDLs) of surface waters in Montana for numerous constituents. These numerical standards will affect how the MDEQ issues discharge

permits for various industries, including the oil and gas industry.

C-49: The authors of this document have underestimated the amount of surface that actually will be damaged.

R-49: The analysis includes potential direct and indirect as well as short-term and long-term impacts to other resources, including surface disturbance, from CBM activities. The potential amount of surface disturbance is based on acres disturbed by typical existing CBM activities.

C-50: A single EIS for all of Montana is a mistake. The proposed drilling areas are very different and each environment should be studied separately.

R-50: The EIS analyzes typical CBM operations in certain geographical, biologic, cultural, and economic environments. Additional environmental analyses will be conducted for specific project proposals. See responses to similar comments **C-3** and **C-23**.

C-51: BLM should allow ample time for public comment.

R-51: BLM followed the CEQ requirements for a 90-day public comment period.

C-52: The Preferred Alternative should adopt the road/utility corridor provisions of Alternative B.

R-52: Although the Preferred Alternative would not require the use of corridors, operators would be encouraged to locate multiple flowlines in the same trench along the access road whenever possible. The Preferred Alternative allows the flexibility to locate flowlines and power lines as needed after evaluating many factors, including the needs of private surface owners. The operator will address in the Project Plan how the surface owner was consulted for input into the location of roads, pipelines, and utility line routes.

C-53: The experience of other areas should be carefully scrutinized and used to guide the development of alternatives. The CX Ranch studies, Wyoming's experience, and Colorado's experience should be factored into the analysis.

R-53: Other applicable studies pertaining to regional CBM development were reviewed and incorporated by specialists into their respective resource topic impact discussions. See the Bibliography for a list of references.

C-54: The BLM and the State should focus this DEIS on the Lower Tongue and Powder River basins, as it appears to be the focal point of future CBM development.

R-54: The CBM emphasis area encompassed the Lower Tongue and Powder River basins as the focus of the study.

C-55: A direct assessment of Alternative E with releases of CBM water to surface water is likely to exceed proposed water quality standards for several rivers of the basin. Therefore, this alternative may not be acceptable with respect to water quality.

R-55: A direct assessment of assumed water discharges that would occur under Alternative E has been conducted in the FEIS Hydrological Resources section of Chapter 4. The analysis indicates that surface water quality will be slightly altered, but State and Northern Cheyenne water quality standards would be met and existing beneficial uses would be protected.

C-56: If the Preferred Alternative is followed, the following should be included in the alternative:

- Consultation with fish and wildlife management agencies and other affected parties, as well as consultation with surface owners
- Commitment to conducting a permit/project site
- Other surface facilities (i.e., roads, compressor stations, impoundments, etc.) in the operators' demonstration of how their proposals would mitigate impacts on wildlife and fish
- A project-specific explanation and mitigation plan for impacts on neighboring activities and resources (fish, wildlife, agriculture, recreation, coal mining, etc.) or potentials for resource development

R-56: All of these issues have been incorporated into the Preferred Alternative as mitigation measures, the Wildlife Monitoring and Protection Plan, or will be addressed in the project Plan of Development.

C-57: The DEIS is inadequate in its analysis of the fire risks posed for Bozeman Pass area residents.

R-57: When and if an operator proposes to develop the Bozeman Pass area, an EA or EIS would be required that addresses site-specific concerns such as fire risk.

C-58: The DEIS seems to divide ecosystems into pieces, thereby dividing one watershed between separate analyses, so it can avoid full disclosure of cumulative impacts and the need to minimize them.

R-58: The FEIS impact analysis conducted for resource topics includes a full range of potential

projects that might add to the cumulative effect. A full explanation of cumulative impacts within the level of planning for these actions has been disclosed in Chapter 4.

C-59: A longer development cycle, perhaps 40 years instead of 20, could bring more economic benefit to the region.

R-59: The length of the development cycle is dependent upon economics of the product (gas), and the producing company's strategies. BLM has a legal obligation to ensure that leased federal minerals are reasonably developed and that federal minerals are not drained by production that occurs on non-federal leases. The State and private parties own much of the minerals and surface in the emphasis area, resulting in a checkerboard pattern that could compromise the BLM's legal obligation to protect federal minerals.

C-60: The state and federal government should hold off on development until all studies necessary for the analysis are completed.

R-60: The quantity of information that has been obtained to date is sufficient to support the development of CBM under the provisions of Alternative E—Preferred Alternative. Additional site-specific information would be obtained for further evaluation as CBM projects are proposed.

C-61: For clarity, spell out "Montana Environmental Policy Act (MEPA)."

R-61: The acronym MEPA is included in and spelled out in the Acronym List in the FEIS.

C-62: BLM and the State should use the operating standards and mitigation measures presented in the Draft EIS and Draft Planning Amendment for the Powder River Basin Oil and Gas Projection. The Buffalo Field Office has developed successful standards and measures from past experience that can be transferred to Montana oil and gas operations.

R-62: These measures were considered in preparation of the FEIS. The State also has its own laws and regulations that need to be considered during the development of management alternatives.

C-63: The BLM DEIS fails to recognize and address impacts from ongoing CBM development in other areas.

R-63: Both the DEIS and FEIS included existing CBM development in the State to develop the impact analyses for each alternative. CBM development in Wyoming was included as part of the cumulative effects analysis.

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C-64: The requirement of surface owner consultation prior to approvals will help protect private property rights.

R-64: Both BLM and the State strongly encourage company representatives to enter into discussions with private surface owners and mineral owners as early as possible and to continue discussions during the life of the project. Agencies will consider the concerns and requirements of private surface owners, and incorporate mitigation requirements with approved permits as allowed by law and regulation. Alternative E, the preferred alternative, includes language addressing this point.

C-65: The producer should pay for all inspection costs.

R-65: The BLM and State bear the responsibility for conducting inspections associated with activities they have approved. The inspections are intended to determine compliance with approved permits and regulations, the effectiveness of mitigation measures, and the need to modify mitigation measures. Inspections may be conducted solely by agency personnel or with company representatives or surface owners.

C-66: The massive scale and rapid time frame for CBM development is wrong. Development should be slow and small to allow for developing good plans and creating additional technology to mitigate impacts.

R-66: Many factors influence the location, scale, and speed of CBM development. The needs of mineral owners, surface owners, lease holders, and land management agencies also affect CBM development. Adaptive management practices would be employed by CBM companies as a result of monitoring data and technology improvements.

Air Quality and Climate

Comments and Responses

Comment 1 (C-1): Livestock can be seriously impacted by blowing dust from roads and development. Historically, cattle have died from severe exposure. Has this been evaluated, and, if there are impacts, who would pay for it?

Response 1 (R-1): Fugitive dust emissions from access roads and other CBM activities have been addressed in the EIS. Air pollution permits issued for CBM development activities will require use of dust control measures (e.g., water, speed limits, etc.) ensure compliance with state regulations. A study on the potential impacts of small dust particles (PM₁₀ and PM_{2.5}) on regional air quality (versus federal air quality standards) has been performed and the results included in the FEIS. The issue of compensation for damage and losses is outside the scope of this document. However, reporting of purported air quality violations and nuisance dust problems is addressed in **R-2**, below.

C-2: Problems from excessive dust caused by roads and traffic will be severe. How will air quality violations be monitored and what will happen if the standards are exceeded?

R-2: Visible dust emissions will be controlled by the operating companies and monitored by both the operating companies and regulating agency personnel. The control and monitoring will be performed in accordance with the terms of air permits issued for the developments, on which the public will have the opportunity to provide comments. Companies would be required to implement changes in operations to be in compliance with permits if standards are exceeded. Suspected violations of the terms of these permits may be reported to the appropriate regulating agency, in most cases the MDEQ.

C-3: In Chapter 4, Air Quality and Climate, increased traffic through the reservation because of increased population and development will have an effect on the air quality.

R-3: Potential impacts on air quality on the Northern Cheyenne Reservation, as well as other areas in the region, have been evaluated using complex modeling programs. The air quality was assessed using existing background concentrations and the impacts from reasonable foreseeable development and alternative scenarios. The effects on air quality are addressed in Chapter 4.

C-4: The study assumes one trip per week per well site will be required to refill the fuel tanks for either propane or diesel. Since diesel has a heating value approximately 1.5 times greater than propane, in a three-month period four fewer trips per well site would actually be made for diesel fired engines. This would mean much less dust contributing to PM₁₀ levels. This should be considered in the air quality analysis. The analysis should also provide for an economic analysis that compares the difference in cost of diesel fuel vs. propane.

R-4: The number of vehicle trips may be lower for different fuels. However, the number of vehicle trips per fuel type was not considered in this evaluation due to the unlimited number of situations and variables involved (e.g., distance to fueling stations, operating efficiencies, etc.). The companies developing CBM facilities are expected to perform the technical and economic evaluations given the specific characteristics of their developments, as well as the fuels and equipment available. Therefore, to simplify the analysis one vehicle trip per week per well site was assumed. It should also be noted that other operation and maintenance activities may be associated with this weekly trip.

C-5: Will any dust attenuation measures be taken? If so, what are they and what impacts might they have? What will be used for dust suppression and what are nonsaline dust suppressants? What will their impacts be on the environment? If water is to be used, what will be the source? What mitigation measures would be used to control dust?

R-5: Application of water is the most common form of controlling dust emissions; however, numerous other surfactants, dust suppressant oils, etc. may be used. Examples of alternative dust suppressants are given in: http://www.deq.state.mt.us/pcd/awm/forms/haz_dust_suppres_altern.doc. The Air Quality Modeling Appendix also includes fugitive dust mitigation measures, relative effectiveness of such measures and costs. The methods will be specified in the air permits issued for the project developments. The public will have the opportunity to provide comments on these projects.

C-6: What rights do landowners have for recourse when they experience noise and air pollution on their ranches?

R-6: See **R-1** and **R-2**. Citizens who feel they have experienced undue air quality and noise impacts should first contact the appropriate government agency to investigate and provide relief (such as their local municipality, county, state, federal or tribal agencies). For illegal air quality impacts, private citizen's suits are permitted under CAA Section 304.

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Air Quality and Climate

C-7: The air quality data on existing conditions are seriously deficient and the air pollution assessment does not provide a meaningful examine of potential air quality impacts.

R-7: A comprehensive air quality analysis has been performed. The air quality analysis used existing background concentrations and the impacts from reasonably foreseeable development and alternative scenarios. The air quality modeling findings represent the general potential impact on Class I (e.g., wilderness areas) and Class II areas in the region. Air permits will be required for the proposed development plans. The air permit applications will need to include demonstrations that the CBM operations will not violate the National Ambient Air Quality Standards (NAAQS) and Montana Ambient Air Quality Standards (MAAQS) in the area. This analysis would take into account local air quality issues. The MDEQ may be contacted for more information on public and private air monitoring stations in the region. Additionally, a single, combined Technical Support Document - Air Quality Impact Assessment (Argonne 2002) was prepared, including several revisions suggested in public comments on the DEIS, to support publication of both states' FEIS' (i.e., this EIS and the Wyoming BLM's Final Environmental Impact Statement and Draft Planning Amendment for the Powder River Basin Oil and Gas Project).

C-8: Where are the monitors used for baseline monitoring? Why is the air quality data collected on the reservation (Table 3-1) not presented as baseline data?

R-8: The background data was taken from various monitoring stations, including urban areas, in the State and therefore considered representative for the region as a whole. Given that this may yield relatively higher values relative to solely high air quality rural areas, it appropriately represents areas where impacts have already occurred and additional impacts are more critical from a NAAQS and MAAQS standpoint. The tribally designated Northern Cheyenne Reservation Class I (high air quality) area is subject to special protection to limit degradation of air quality and has more restrictive limits on the amount of degradation allowed. The air quality modeling assesses the potential impact on both Class I and Class II areas and is included in the final EIS.

C-9: The air monitoring plans are inadequate in frequency and in number and placement of monitoring stations.

R-9: As a part of the application approval, MDEQ determines the number, placement and reporting requirements for monitoring stations associated with the permit. MDEQ operates monitoring stations throughout the state. Proposed monitoring plans for a specific area can be submitted to the MDEQ for consideration during the permitting process.

C-10: What will the cumulative impacts of air quality be from CBM development in Wyoming?

R-10: The air quality modeling results include analysis of potential cumulative impacts from emission sources in Montana, Wyoming, North Dakota, South Dakota, and Nebraska, as well as Wyoming Powder River Basin Oil and Gas Projects. The results of the modeling indicate that operators of existing and proposed emission sources will have to implement mitigation measures to ensure compliance with air quality standards.

C-11: The EIS doesn't consider these air quality impacts: 1) release of sulfides that contribute to acid precipitation, and 2) the impacts of global climate change from emissions of methane-migration and venting (intentional and unintentional) and other emissions.

R-11: The potential impacts of pollutants associated with acid deposition (rain) are addressed through air quality modeling. The modeling analysis for atmospheric depositions is presented in the final EIS and detailed in the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002). Controlled and uncontrolled venting of methane and other pollutants will be addressed in the state and/or federal air quality permits. See **R-88** regarding climate change.

C-12: Chapter 2 mentions noise from gas-fired engines at compressor stations. What are the penalties if the 50-decibel level is exceeded?

R-12: Appropriate noise mitigation is required to reduce the decibel level to required limits. If exceeded, additional engineering controls would be installed.

C-13: In Chapter 4, Assumptions Common to All Alternatives, the EIS should advise the reader that generators are subject to air quality permitting rules and regulations administered by the MDEQ.

R-13: Generators, as well as compressors, are subject to the air quality and permitting rules and regulations administered by the MDEQ. Note that this issue is identified in Resource Topics, Air Quality and Climate.

C-14: In Chapter 4, Air Quality and Climate, we understand that air quality in Wyoming is reaching limits that will trigger limits on further coal mining and CBM

development. What can be done differently in Montana to prevent this situation?

R-14: Existing air quality regulations limit the degradation of air quality in the region. Development of CBM as well as other pollutant sources may be limited as a result of these regulations or operators of emission sources would be required to implement mitigation measures to ensure compliance with standards. The regulations function on a first come, first served basis, so future developments may need to incorporate plans to reduce existing emission sources.

C-15: In Chapter 4, Air Quality and Climate, a more detailed explanation of Best Available Control Technology (BACT) analysis and determination would be appropriate in this section.

R-15: The BACT analysis is a process whereby a company must demonstrate that the BACT will be used to control pollutants from the source. The analysis is based on technology, economics and other issues. The BACT analysis process is fairly complex. Specific descriptions of the BACT analysis will be included in applicable permit applications submitted to the MDEQ. The MDEQ and Region VIII EPA offices may be contacted for additional information.

C-16: In Chapter 4, Air Quality and Climate, was air quality analyzed as one well at a time or as a fully developed field? Will this trigger an EA under Montana air permit requirements?

R-16: The potential impacts on regional air quality assumes full field development, as well as reasonable foreseeable development activities. MDEQ will conduct an environmental analysis as part of the air permit application process. Also, refer to **R-7** and **R-10**.

C-17: In Chapter 4, Impacts From Management Specific to Each Alternative the assumption that potential 8-hour hazardous air pollutant concentrations would be below a range of maximum Acceptable Ambient Concentration Levels identified in other states should be clarified.

R-17: The State of Montana currently does not have specific air toxic regulations. In order to assess potential impacts caused by air toxins from CBM operations, emissions are compared against air toxic standards set in other States.

C-18: In Chapter 4 under Air Quality in the Impacts From Management Specific to Each Alternative section, it states that mitigation, monitoring, testing, inventorying, and reporting may

be required as part of any air quality permitting. The reader should be apprised of these additional mitigation measures that the respective agency has the authority to request.

R-18: The public may obtain information and provide comments on proposed air permits regarding monitoring, testing, inventorying and reporting. Refer to **R-2**, **R-5**, and **R-9**. The Air Quality Modeling Appendix in the FEIS includes more detailed information about mitigation measures, agency authorities and permitting processes.

C-19: BLM must complete a thorough review of the Wyoming and Montana State Implementation Plans (SIP) and assess how the project will conform to SIP provisions aimed at achieving the NAAQS for particulate matter in Sheridan and Rosebud counties.

R-19: BLM's responsibility to perform a site-specific Conformity Analysis (and possible Determination), demonstrating the proposed activity will comply with all applicable air quality requirements of a SIP, before these activities can take place in non-attainment or maintenance areas, has been documented in the FEIS. However, under EPA's General Conformity Regulations the analysis is to be performed "before the action is taken," not necessarily at the programmatic NEPA analysis stage. The Conformity Analysis may either be tiered to a NEPA analysis, or prepared separately. For those activities that BLM may conduct within designated nonattainment or maintenance areas including the Lame Deer Moderate PM₁₀, Billings CO, Laurel Area SO₂, or Sheridan (WY) Moderate PM₁₀ nonattainment areas, a site-specific Conformity Analysis (and possible Determination) will be conducted before the specific action is taken.

C-20: What are the impacts from generators?

R-20: Air quality impacts from generators, as well as from compressors, road dust, etc., are included in the FEIS, Chapter 4.

C-21: Is Billings a non-attainment area for carbon monoxide (CO)?

R-21: Billings is a "maintenance area" for CO; it was formerly designated a non-attainment area.

C-22: We need an analysis of the impacts of CBM development on air quality. Can you describe the impacts caused by the increased traffic and carbon dioxide (CO₂) generation? Will there be an increased chance of wildfires and what will be the impacts of fires on air quality?

R-22: Potential impacts on air quality in the region, including the reservations, have been determined based

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on modeling. Cumulative impacts from increased traffic and other types of developments were also included in the air quality analysis. An increase in the number of wildfires could occur as a result of increased human activities associated with CBM development; however, wildfires were not included because they are not readily predictable.

C-23: We've heard that hydrogen sulfide is a dangerous pollutant and is released from CBM wells. How will we be protected?

R-23: Current data does not show that H₂S is produced by CBM wells in the Montana portion of the Powder River Basin. The State of Montana and Bureau of Land Management have regulations specific for hydrogen sulfide (H₂S) emissions from oil and gas development. Developers of federal minerals will need to show compliance with Onshore Oil and Gas Order No. 6, which requires special precautions to protect workers essential to well control and the public.

C-24: The EIS does not mention the benefit of capturing methane gas and not allowing it escape into the atmosphere. Can you explain?

R-24: A general statement regarding this issue was added to the FEIS, Chapter 4.

C-25: Comments on the DEIS recommended specific text changes.

R-25: These changes were either made as recommended, or were no longer applicable due to the revised combined Montana and Wyoming FEIS air quality impact analysis.

C-26: The DEIS does not ensure the Proposed Action or Alternatives will comply with federal and state air pollution standards, including the requirements of the PSD program. Under FLPMA Section 202, BLM cannot defer this compliance to a "project" level analysis. Furthermore, without quantifying potential impacts, even if comparisons of alternative management practices are meant to assure us that potential impacts won't be as bad as the "no enforcement - full development" case, informed choices among alternatives can not be made.

R-26: Both the DEIS and FEIS clearly disclose that "FLPMA (43 U.S.C 1701 et seq.) and the CAA (42 U.S.C 7401 et seq.) as amended, require that BLM assure the actions it conducts or authorizes (including oil and gas development) comply with all applicable local, state, tribal and federal air quality laws, regulations, standards, and implementation plans. Local, state and tribal requirements may be

more (but not less) stringent than federal requirements." BLM has not attempted to "defer this compliance to a 'project' level analysis," however, site-specific analysis of potential air quality impacts is simply beyond the scope of this analysis and compliance cannot be assured until a project level analysis is performed. Also see R-7. The FEIS air quality analysis is not intended to represent a formal regulatory PSD analysis of proposed projects, rather it presents potential impacts from proposed development alternatives. The regulatory agencies in each State have responsibility for requiring a formal regulatory PSD analysis for both PRBO&G and non-PRBO&G proposed projects. Specific mitigation, monitoring and other requirements will be specified at that time based on existing, actual data. Additional text has been added to the FEIS to try and clarify this issue.

C-27: The Bozeman Pass residential area, with an elementary school, is located within the CBM emphasis area. The DEIS fails to adequately address air quality impacts across the state, let alone in the Bozeman Pass area where housing is in close proximity to potential industrial development.

R-27: The FEIS includes a description of potential impacts to air quality. Gallatin and Park Counties were included in the detailed modeling conducting to assess potential impacts. Further analysis of site-specific surface disturbing activity will be required before construction can occur. For example, an APD includes several environmental protection provisions, including the mandatory compliance with all applicable air quality regulations. Site-specific analysis of potential air quality impacts is simply beyond the scope of the FEIS, and compliance cannot be assured until a project level analysis is performed

C-28: Based on experiences in Wyoming, we are concerned that measures to limit air quality impacts will be insufficient, triggering limits on further coal mining and CBM development in Montana. How will we be protected from health and economic degradation that will come from dust and other air quality impacts? What will happen if air quality standards are exceeded? How will air quality violations be monitored?

R-28: See R-6. Since the CAA was originally passed in 1955, the U.S. Congress has delegated implementation of the Act to applicable local, state and tribal air quality regulatory agencies, with EPA oversight since 1970. These agencies have the responsibility and authority to protect the public from "health and economic degradation that [may] come from dust and other air quality impacts," and each agency has its own procedures for preventing, monitoring, investigating and enforcing potential air quality violations (including the exceedance of applicable air quality standards).

C-29: The rapid expansion of CBM exploration and development emphasizes the need for early coordination between BLM and the NPS prior to approval of specific lease tracts which may adversely affect park NPS units.

R-29: BLM will continue to work closely with agencies and members of the public who may be affected by BLM decisions. Interested groups are encouraged to contact either the Miles City or Billings Field Offices specifically regarding future CBM exploration and development activities.

C-30: The DEIS addressing potential CBM development in Montana, and a DEIS for similar development in Wyoming, should have used a single cumulative air quality impact assessment.

R-30: This has been done in the air quality impact analysis for the Montana Statewide Oil and Gas FEIS and is detailed in the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002). This quantitative air quality impact assessment analyzes potential oil and gas activities, as well as other non-project activities, throughout southeastern Montana, northeastern Wyoming, S. Dakota, N. Dakota and Nebraska. The combined analysis was prepared to support publication of both states' FEIS'.

C-31: The DEIS failed to address air pollutant emission sources (including sources of particulate matter, nitrogen oxides, SO₂ and other hazardous pollutants) resulting from the same extraction methods in Wyoming. Consequently, "the best way to adequately assess the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement." Air pollutant emissions from the entire area should be evaluated as a whole.

R-31: As described above, "air pollutant emissions from the entire area" of southeastern Montana and northeastern Wyoming were combined for the analysis of impacts in the FEIS. A single Technical Support Document - Air Quality Impact Assessment (Argonne 2002) was prepared to support publication of both states' FEIS'.

C-32: Because separate DEIS' were prepared in Montana and Wyoming, various alternatives were considered then dropped for various reasons, with differing outcomes and associated impacts. For example, the Wyoming DEIS alternatives focused exclusively on water issues, ignoring a myriad of potential air quality impacts. These potential impacts are integral to the project, and should have been

included in developing both the management alternatives and mitigation strategies.

R-32: Both documents describe the process by which Alternatives were "Analyzed in Detail," or were "Considered but Not Analyzed in Detail." Potential air quality impacts were clearly identified as issues in both documents and both documents did consider an Alternative in detail that would limit emission sources and air quality impacts. **See R-30.**

C-33: Rather than limiting the DEIS alternatives to use of natural gas for the reciprocating compressors and varying amounts of electricity to power the booster compressors, a more distinct set of alternatives should be identified, such as partial development, with continuing evaluation studies, spread out over a longer time period, allows options to introduce new control technologies and/or to propose stricter guidelines.

R-33: **See R-32.** Additionally, other alternatives that are not included in the detailed analysis such as partial/phased development are discussed in Chapter 2 of the FEIS (including the reasoning for why they were eliminated from detailed analyses). Furthermore, the actual application of control technologies and the ability to propose stricter guidelines will be evaluated at permitting stages of development and be equipment specific.

C-34: The DEIS and the Air Quality Impact Assessment seem to address different "no build" situations under the "No Action" alternative. This inconsistency might be a serious flaw, misleading the public, tribal leaders and decision makers.

R-34: The No Action Alternative is a description of the current management of CBM by BLM and the State. The FEIS describes the potential impacts from projected CBM operations and cumulative impacts from other activities in addition to projected CBM operations.

C-35: The DEIS statement "Since the direct Alternative C and cumulative air pollutant emission sources constitute many minor sources spread out over a very large area, it is unlikely the maximum potential air quality impacts [would exceed applicable threshold levels]" was based solely on anticipated emission levels. A quantitative analysis of potential air quality impacts using an appropriate quantitative air quality impact model is necessary to make this assertion, and essential for providing full disclosure of potential impacts under NEPA.

R-35: The quantitative analysis is presented in the FEIS, based on the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002). **See also R-7.**

C-36: Because the Montana air quality impact analysis was not available before this DEIS' comment period closed, additional air quality impact analyses should be included in a revised or supplemental Draft EIS, in order to provide the public an adequate opportunity to review and comment on this complex issue.

R-36: A qualitative air quality impact assessment was prepared for and published in the Final EIS. Although specific potential air quality impact values have changed in the Final EIS, the basic conclusions of the Draft EIS remain the same. That is, direct air quality impacts from CBM activities are not likely to exceed Ambient Air Quality or PSD Standards under any Alternative. However, there is a potential for cumulative air quality impacts to exceed short-term PSD Class I and II increments, as well as ambient air quality standards, applicable visibility and ANC thresholds under various proposed Alternatives.

BLM carefully considered whether to issue a supplement to the DEIS before publishing the Final EIS. The action depicted in the Final EIS has not changed substantially from the Draft EIS. New information has been considered in response to comments received on the DEIS. The analysis used in the FEIS to predict air impacts was improved and some of the analytical assumptions were changed based on the most current information, and in response to comments. The models used in the FEIS do predict that exceedances of some standards could occur for some pollutants. However, the mitigation measures that have been developed will be implemented to prevent some of the predicted impacts from occurring.

The FEIS describes how the agencies will take action by requiring additional analysis and conducting monitoring to ensure that any mitigation measures required as conditions of approval on permits will be effective to ensure compliance with all applicable standards. BLM and the other cooperating agencies will implement adaptive management strategies as needed to prevent potential violations of environmental standards predicted in the models and to facilitate the goals for improvement of air quality.

The new information doesn't meet the regulatory standard for significance because the impacts predicted will be mitigated to a level not significantly different from those predicted in the DEIS, and certainly to a level that will ensure compliance with environmental standards for water and air. The need to mitigate impacts and prevent regulatory violations was assumed in the DEIS as well; and BLM's commitment to implementing such measures as may

be needed is clarified in the FEIS. The potential impacts disclosed in the FEIS help identify and predict the nature of pollutants that will need to be mitigated when future permitting activities are considered by both the BLM and State. The FEIS acknowledges that, as part of the process for consideration of permit applications, the water and air quality regulatory agencies would conduct monitoring and require mitigation measures as needed to ensure compliance with all applicable standards before permits would be approved. All potential exceedances of the established water and air quality standards would be prevented in this manner, and the other changes in impacts overall are not significantly different than the impacts described in the DEIS. Therefore, we conclude that the changes between the DEIS and the FEIS do not meet the regulatory standards for substantial changes in the proposed action, or because of significant new information or circumstances relevant to environmental concerns and bearing on the proposed action or its impacts; and do not require a supplement to the DEIS to be circulated.

C-37: The DEIS does not: present any current ambient air quality or visibility monitoring data; present any specific or cumulative emissions data for any proposed or reasonably foreseeable sources; present any specific or cumulative air quality/visibility impact analyses for any proposed or reasonably foreseeable sources; allow for any timely critical review of such data and analyses.

The DEIS inappropriately depends on future piece-meal source specific air quality permitting requirements to determine potential air quality impacts, in lieu of specific analyses of the expected number of such facilities and their respective air pollutant emissions. Will future analyses be conducted for a fully developed gas field, or one well at a time? Will site-specific NEPA analyses be required by Montana air pollutant emission permitting?

R-37: The qualitative analysis presented in the DEIS has been revised with a quantitative analysis presented in the FEIS, based on the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002). The FEIS is required under NEPA to disclose the potential "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions". Detailed site-specific analyses will be done by BLM for CBM exploration and development proposals. Additionally, the Montana DEQ will perform a detailed air quality analysis of actual proposed facilities (e.g., compressor stations) as part of the air permit application process. **See also R-7.**

C-38: Given the lack of a quantified air quality impact analysis, the DEIS statement “based on the ‘reasonable, but conservative’ assumptions, direct and cumulative impacts are assumed to be within applicable air quality standards” is unsubstantiated. While the DEIS does indicate an air quality dispersion analysis is underway, and will be available for the Final EIS, this quantified analysis should have been included in the DEIS. In addition, the DEIS statement “Impacts to air quality would be localized and short-term in duration, lasting from hours to days” does not take into account that such events can often be severe or frequent.

R-38: See R-7 and R-37. The qualitative analysis presented in the DEIS has been revised with a quantitative analysis presented in the FEIS, based on the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002). The revised cumulative air quality impact assessment included a quantitative analysis of conditions which could be “severe or frequent,” and disclosed the potential for cumulative air quality impacts under all Alternatives.

C-39: The DEIS and the Air Quality Impact Assessment refer to background documents without specifically summarizing what each source contributed. Since these documents were unavailable for review, the relevant assumptions can not be evaluated.

R-39: The Bibliography and References sections of FEIS and the Technical Support Document - Air Quality Impact Assessment (Argonne 2002) have been revised. Details on source contribution are given in the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-40: The DEIS failed to include all new air pollutant emission sources in the air quality impact assessment. This action contravenes NEPA, which requires review of all “past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.”

R-40: The detailed quantitative technical analysis conducted for the FEIS included an evaluation of reasonable foreseeable future actions (RFFA) as well as existing and permitted emission sources within the modeling domain of Montana, Wyoming, S. Dakota, N. Dakota and Nebraska. To the extent that existing monitoring data (as disclosed in the Affected Environment section) present air quality impacts from past projects, they do not require separate

analysis. Similarly, where applicable, the air quality impact assessment should analyze and report potential direct impacts from the Proposed Action and Alternatives (as disclosed in the Environment Consequences section). The direct impact analysis may optionally examine potential impacts from each Alternative, or where no “significant adverse” impacts are anticipated, simply analyze the single Alternative with the greatest potential air quality impacts, and describe all other Alternatives as “likely to have lower potential air quality impacts.” However, in order to conduct a cumulative air quality impact analysis, other RFFA sources must be analyzed and combined with both the past sources (Affected Environment) and direct impacts (Proposed Action and Alternatives). RFFAs are those potential future activities which have not yet occurred, but based on informed professional judgement, are likely to have a combined air quality impact with the Proposed Action or Alternatives. This may include reasonably foreseeable modifications to past sources, or altogether new sources. By no means are all potential future activities to be automatically considered as RFFA sources. The determination must consider the past actions and the likelihood a specific activity will be developed and operate within the same time frame and spatial extent of the Proposed Action or Alternatives so as to cause a cumulative air quality impact. Details on the emission sources included in the study are given in the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-41: The DEIS failed to include several major emission sources as potential RFD actions, therefore the cumulative air quality impact analysis is lacking these important new sources, each of which has the potential to cause an adverse impact.

R-41: See R 40.

C-42: The DEIS failed to consider the health effects and environmental impacts to populations exposed to air pollution generated from burning the fuels outside the analysis domain which would be produced under the Proposed Action and Alternatives, including the economic consequences of reduced life expectancy, increased medical cost, and restricted activity days that would result. An honest and open public debate about our nation’s energy policy should include public health concerns on an equal footing as security and economic considerations.

R-42: The DEIS and FEIS analyzed and disclosed potential air quality impacts from the Proposed Action and all reasonable Alternatives (including “No Action”), but an analysis of “the health effects and environmental impacts to populations exposed to air pollution generated

from” potential natural gas development, “including the economic consequences of reduced life expectancy, increased medical cost and restricted activity days that would result” is beyond the scope of the analysis.

C-43: The DEIS fails to describe potential air quality impacts that would occur by a significant augmentation (up to 3.6 billion cubic feet per day) of the national gas supply, including potential fuel substitution at locations remote from the project site. Were the socioeconomic multiplier effects on air quality considered? If natural gas is not available from the Powder River Basin, will power plants continue to burn coal?

R-43: See R-42.

C-44: The DEIS did not examine potential adverse cumulative air quality impacts on human health and the environment. What cumulative air quality impacts are likely to occur?

R-44: The qualitative analysis presented in the DEIS has been revised with a quantitative analysis presented in the FEIS, based on the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002). The quantitative analysis describes potential impacts on human health and the environment. A near-field analysis of hazardous air pollutants is provided in the Alternative discussions (Chapter 4) as well as the in the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002). Impacts on the environment such as deposition and visibility have also been included in the FEIS.

C-45: The DEIS failed to provide adequate air quality information needed to compare potential impacts from the Proposed Action and Alternatives on the existing environment. Were all monitoring data considered? Where are air quality monitors located? Why were air quality status maps excluded? How about maps of existing and potential air pollutant emission sources? Detailed emissions inventories? PSD baseline values? The air monitoring plans in the appendix are inadequate - twice a year isn't enough.

R-45: The qualitative analysis presented in the DEIS has been revised with a quantitative analysis presented in the FEIS, based on the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002). The revised cumulative air impact assessment disclosed the potential for cumulative air quality impacts under all Alternatives. Specific air quality-

related information (including: monitoring locations; nonattainment and PSD Class I status; Proposed Action, Alternative, and RFD emission source locations; detailed emissions inventories; prevailing and modeled winds; etc.) were assembled, reviewed, and analyzed for the FEIS, and detailed in the Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

As part of the analysis, monitoring data obtained throughout northeastern Wyoming and southeastern Montana were assembled and reviewed, and although the monitoring data were collected primarily in urban or industrial areas, the data were considered to be the best available representation of background air pollutant concentrations throughout the CBM emphasis area. The PSD increment comparisons prepared for the NEPA documents do not represent a regulatory PSD Increment Consumption Analysis, but an assessment intended to evaluate a threshold of concern for potential impacts. Regulatory PSD baseline values were not utilized.

C-46: The DEIS states “Although site-specific quality monitoring is not conducted throughout most of the CBM emphasis area, air quality conditions are likely to be very good.” Shouldn't ambient air quality data be collected now, rather than after development begins? Does the DEIS intend to suggest that because the region currently has clean air, there is a large capacity for additional air pollution?

R-46: Existing monitoring data were assembled, reviewed, and reported in the FEIS. Although these data were collected primarily in urban or industrial areas, they represent background air pollutant concentrations throughout the CBM emphasis area. This evaluation was performed to describe the Affected Environment as required by CEQ regulations (40 CFR 1502.15). Neither the DEIS or FEIS suggested “that because the region currently has clean air, there is a large capacity for additional air pollution.” In fact, the capacity for air quality degradation was specifically analyzed and reported in the FEIS. Details are provided in the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-47: The DEIS states “Although monitoring is primarily conducted in urban or industrial areas, the data are considered to be the best available representation of background air pollutant concentrations through out the CBM emphasis area.” Failure to collect necessary baseline air quality data is contrary to the NEPA requirement to do so when faced with incomplete or unavailable information.

R-47: The Montana Department of Environmental Quality provided background air pollutant concentrations

for the analysis area. The available air quality data was determined to be adequate for these purposes. Additional monitoring data collected by the Northern Cheyenne Tribe is included in the Air Quality Modeling Appendix. See **R-45, R-46, R-48 and R-49**.

C-48: The DEIS used CO data collected in Billings, and NO₂ data collected in Rosebud County, to represent the existing air quality conditions throughout the CBM emphasis area. Isn't Billings a nonattainment area for CO? Colstrip (in Rosebud County) is home to four power plants and two coal mines.

R-48: It was determined through meetings with the regulatory agencies that the air quality monitoring data representative of the CBM emphasis area were utilized in the FEIS, and detailed in the Technical Support Document - Air Quality Impact Assessment (Argonne 2002). See **R-46, and R-47**.

C-49: Why didn't the DEIS reference PM_{2.5} and PM₁₀ data collected in Lame Deer, Montana, when describing the background air quality conditions? Since Lame Deer, Montana is a moderate PM₁₀ nonattainment area, what air quality data did the DEIS use to determine there will not be any adverse PM_{2.5} and PM₁₀ impacts?

R-49: In both the DEIS and FEIS, Lame Deer, Montana is described as a moderate PM₁₀ nonattainment area, and potential impacts to Lame Deer local air quality is addressed. The Lame Deer PM_{2.5} and PM₁₀ data are not representative of the CBM emphasis area in general, and were not included when describing the assumed background air quality conditions.

C-50: BLM has failed to comply with its legal responsibilities under the CAA's general conformity requirements by failing to examine potential air quality impacts on the following nonattainment areas: the City of Sheridan, Wyoming; part of Rosebud County, Montana; and part of Yellowstone County, Montana. Therefore, the BLM must complete a thorough review of the Wyoming and Montana SIPs and assess how its actions will conform to SIP provisions aimed at achieving the NAAQS. BLM cannot simply defer its responsibility to future actions by another agency.

R-50: See **R-19**.

C-51: The DEIS does not adequately describe existing air quality trends in the Powder River Basin: air quality conditions have changed considerably during the last several years. Beginning in 1999,

PM₁₀ impacts from unpaved roads have been measured at or above the Class II PSD increment, culminating in 13 exceedances of the NAAQS in 2001 and 2002. Since the DEIS did not disclose this situation, and with the potential increase in road use, the cumulative analysis should be revised to include these data, revise its predictions, and mitigation measures should be analyzed (in consultation with the Wyoming DEQ).

R-51: A review of data collected at monitoring locations in Wyoming (EPA 2002b and Payton 2002) indicate the annual PM₁₀ NAAQS (at 50 µg/m³) was exceeded twice during the last six year period of record: once in 2000 at the North Rochelle No.1 monitoring station (at 50.8 µg/m³); and once in 2001 at the North Rochelle No. E monitoring station (at 51 µg/m³). This NAAQS may also be exceeded in 2002 at the North Rochelle No.1 and the Thunder Basin Coal No. 891 monitoring stations. The 24-hour PM₁₀ NAAQS (at 150 µg/m³) was also exceeded in 2001 at the North Rochelle No. 1 (268 µg/m³) and the North Rochelle No. E (156 µg/m³) monitoring stations, and so far in 2002 at the North Rochelle No.1 (211 µg/m³) and the Thunder Basin Coal No. 891 (155 µg/m³) monitoring stations. There is a possibility that these monitoring locations may also have exceeded allowable PM₁₀ PSD Class II increments.

While these recent elevated values certainly warrant investigation, the nature of the exceedances and the possible interpretation as NAAQS violations is the responsibility of applicable air quality regulatory agencies, with EPA oversight. The background values used in the air quality analysis were determined through reviews with the regulatory agencies.

C-52: How were prevailing winds throughout the CBM emphasis area considered in the DEIS?

R-52: Prevailing and modeled winds were assembled, reviewed, and analyzed for the FEIS, and detailed in the Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-53: The projected emission levels presented in the DEIS are much lower than will actually occur. A full inventory of all relevant pollution sources must be incorporated; including: construction equipment (e.g., backhoes, bulldozers, and graders), compressors, diesel and gas generators, coal fires, as well as Wyoming and Montana cumulative emission sources.

R-53: The emissions inventory used for the DEIS was expanded to include large portions of southeastern Montana and northeastern Wyoming. Potential cumulative air pollutant emissions from "construction equipment (e.g., backhoes, bulldozers, and graders), operation and maintenance activities, compressors, diesel

and gas generators, as well as Wyoming and Montana cumulative [RFD] emission sources” and reasonable foreseeable future actions, are documented in the FEIS Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-54: The modeling of the peak emission year appears to be a reasonable choice that is protective of human health, because long-term emissions are overestimated. However, several “conservative” emission factors appear to have been made, which are overestimates of emissions in most cases.

R-54: CEQ regulations (40 CFR 1502.22) require federal agencies to evaluate potential reasonably foreseeable impacts of an action, even in the face of unavailable or incomplete information. Where this unavailable information can not be reasonably obtained within the time frames of the analysis, “reasonable, but conservative” assumptions are used. For the air quality impact assessment, this includes estimates of background air quality conditions, the methods and timing of potential development, air pollutant emissions estimates, and even significance threshold levels. Where precise emissions information was not available reasonable assumptions developed in coordination with the regulatory agencies were used.

C-55: The DEIS does not provide adequate information regarding how air pollutant emission source were specified. For example, are these sources modeled as point, line or volume sources? If modeled as point sources, what stack characteristics were used (e.g. stack height, exit temperature and velocity)? How were particle size distributions specified? Drilling activities?

R-55: The FEIS presents summaries of the complete air quality impact assessment published in the Technical Support Document (Argonne 2002). This includes emission source characteristics, particle size assumptions, construction and operation assumptions, and the development scenarios addressed. In addition to the Technical Support Document, copies of the actual modeling files are available upon request.

C-56: The DEIS assumed that one well site visit per week would be necessary to refill the generator fuel tanks with either propane or diesel fuel. However, since diesel has a heating value nearly 1.5 times greater than propane, four fewer trips per well site would actually be needed in a three month period if diesel fired engines were used. This would generate much less fugitive road dust, contributing to PM₁₀ impacts.

R-56: See R-4.

C-57: What is the technical basis (references) for potential emission and air quality impacts from the DEIS assumption: “Methane would be flared (burned off) continuously during the testing phase.”

R-57: As described in the FEIS Technical Support Document - Air Quality Impact Assessment (Argonne 2002), it was assumed that CBM could be flared and exhausted to the atmosphere continuously for up to 24-hours in order to test the production viability of the well. Viable wells would then be connected to the pipeline distribution system; non-viable wells would either be closed-in for possible future development, or plugged, reclaimed and abandoned.

C-58: Are there local siting criteria to minimize air quality impacts from a well pad/wells?

R-58: As disclosed in the FEIS, further analysis of site-specific surface disturbing activity will be required (through either an APD or a Right-of-Way/Special Uses Permit), before any construction, testing or production operations can occur. Permitting agencies will consider siting and other mitigation measures to minimize impacts to air quality.

C-59: The Wyoming DEIS states “at any one time there may be as many as 400 portable diesel generators and 70 portable gas generators operating,” however, the DEIS did not consider potential air quality impacts from these sources.

R-59: The FEIS Technical Support Document - Air Quality Impact Assessment (Argonne 2002) includes these sources in the air quality impact analysis, and describes potential air pollutant emissions from temporary/portable electrical generators until line power would become available at the well sites.

C-60: The average NO_x emissions rate of 1.5 g/hp-hr from ancillary generators during operation seems overly simplistic. Shouldn’t the emissions rates vary during start-up and shut-down, or under varying capacities? How about during various phases of project development?

R-60: CEQ regulations (40 CFR 1502.22) require federal agencies to evaluate potential reasonably foreseeable impacts of an action, even in the face of unavailable or incomplete information. Specific information regarding air pollutant emission variations “during start-up and shut-down, or under varying capacities” is simply not available. Therefore the “reasonable” average NO_x emissions rate of 1.5 g/hp-hr assumption was used in the air quality impact assessment.

C-61: Considering the large amount of generation- and transportation-related fuel that will be burned in the extraction process, what would be the net energy gain from this development, and the air pollutant emissions equivalent of this demand?

R-61: Potential air quality impacts from the construction and operation of the Proposed Action and Alternatives (including the necessary fuel requirements, such as diesel-powered construction equipment, temporary well site generators, motor vehicle use, natural gas and electric compressors, etc.) were quantified and provided in the FEIS Technical Support Documents - Air Quality Impact Assessment (Argonne 2002).

C-62: It is possible that natural gas-powered equipment may not be available when the project begins, or may not be economical. Why can't diesel-fired generators be used temporarily during the depressuring phase?

R-62: The use of natural gas-fired equipment would be required to reduce air pollutants. **See R-59.**

C-63: Since electric compressors were considered as an Alternative in the Wyoming DEIS, why did the Montana DEIS ignore this option? However, if included in the Montana DEIS, the analysis should describe if the necessary electricity would come from one of the nearby coal-fired power plants, or be generated on site.

R-63: The Montana DEIS and FEIS Alternative D specifically states "Natural gas engines with electric booster would be required for all compression operations." Given the large number of RFD electrical generation projects included in the air quality impact assessment, it was assumed electrical line power would be available to operate electrical field (booster) compressors.

C-64: It is not clear how secondary sulfate and nitrate impacts were reported. Apparently the RIVAD/ARM3 chemical transformation scheme was applied, but were secondary aerosol concentrations produced by size range? Did the reported $PM_{2.5}$ and PM_{10} concentrations include both primary and secondary particles?

R-64: When comparing potential particulate matter impacts to the ambient air quality standards, secondary particulate matter was added to both the primary $PM_{2.5}$ and PM_{10} predicted concentrations (assuming that all secondary particulate matter was less than 2.5 microns in effective diameter). However, when potential visibility impacts were determined, the primary particulate matter was

assumed to be either $PM_{2.5}$ or the "coarse" fraction between $PM_{2.5}$ and PM_{10} , whereas potential sulfate and nitrate impacts were calculated separately (due to their higher extinction efficiencies). Modeling details are given in the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-65: What trace contaminant impacts would occur from fugitive emissions of organic condensate, sulfur and radon from the exploration, development and production activities? In one place the DEIS states that the natural gas does not contain sulfur compounds, and in another that methane migration could drive oxygen out of the soils and produce toxic levels of sulfur. Potential worker safety issues raised by these contaminants should be addressed in the DEIS.

R-65: CBM resources are essentially pure methane gas; there would be no significant quantities of condensate or sulfur contaminants. There is a potential for the biologic formation of hydrogen sulfide due to methane migration in older fields, but the controlled extraction of CBM would reduce that migration. The potential for hazardous air pollutants (HAPs) from CBM and conventional oil development was quantified and provided in the Technical Support Document - Air Quality Impact Assessment (Argonne 2002). Delineation of the extent metals and radiological contaminants that may be found naturally in the CBM emphasis area's soils, was not performed.

C-66: Why did the DEIS omit accidental or transient air pollutant releases in the emissions inventory? Significance exists if it is reasonable to anticipate the cumulatively significant impact, and merely terming an action temporary does not avoid the significance of the impact.

R-66: By their nature, accidental and natural releases of air pollutants are neither reasonably foreseeable nor subject to any health or environmental regulations. "Transient" or temporary air pollutant emissions during construction were quantified and provided in the FEIS and Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-67: The Proposed Action and Alternatives also create a serious risk of coal fires that can emit harmful air pollutants that must be assessed in determining potential air impacts.

R-67: It is true that accidental and natural coal seam fires have occurred for centuries throughout the Rocky Mountain West, and that they do release air pollutant emissions. However, the development of CBM resources is not expected to increase the "serious risk of coal fires that can emit harmful air pollutants. These

emissions are not considered a reasonable foreseeable action.

C-68: The Montana DEIS does not provide adequate information to determine if far-field air quality impacts were analyzed. However, the Wyoming DEIS used the same modeling domain as in the previous DM&E New Railway Retrofit Project. What is the rationale for limiting the air quality analysis to the same study area as a railroad “retrofit” project east of the development area?

R-68: Both potential near- and far-field air quality impacts were addressed in the Montana DEIS (qualitatively) and FEIS (quantitatively). The two FEIS documents have been prepared using one combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-69: Fine particulate matter can travel a long distance in the atmosphere, resulting in significant human health impacts at remote population centers located outside the DEIS’ modeling domain. The DEIS may not have identified the full impact of the Proposed Action and Alternative emission sources.

R-69: See R-7 and R-42.

C-70: The DEIS briefly mentions air quality impacts from dirt roads (“Roads and well locations constructed on soils susceptible to wind erosion could be appropriately surfaced to reduce the amount of fugitive dust ... and dust inhibitors ... could be used as necessary on unpaved collector, local, and resource roads ...”). However, the FEIS should clarify who will be responsible for ensuring, rather than simply encouraging, dust prevention measures to be taken. Just about all roads in the CBM emphasis area are subject to wind erosion. Is there a plan for controlling road dust? Regarding dust inhibitors, what are they and who will apply them? If water is to be used, what will be the source? Will dust management be conducted with high SAR water with its negative impacts on plants? What chemicals will be used for dust suppression? What are non-saline dust suppressants? What will their impacts be on the environment?

R-70: Fugitive dust emissions from unpaved roads may be reduced by: vehicle use limits (reducing the number, speed or weight of vehicles); surfacing (with gravel, asphalt or cement); and application of dust suppressants (non-saline surfactants to increase road surface moisture, or binding road materials together to form a hard-packed surface).

As stated in both the DEIS and FEIS “Particulate matter emissions from well pad and resource road construction would be minimized by application of water and/or chemical dust suppressants. The control efficiency of these dust suppressants was computed at 50 per cent during construction.” This requirement would be part of the BLM approved APD, and may also specify the source and quality of water to be used. During production and maintenance, the Companies would not routinely employ dust abatement procedures on roads within the CBM emphasis area. However, the BLM does consider dust abatement during production activities and would require mitigation measures if necessary.

The determination of necessary road surfacing throughout the CBM emphasis area (and other dust abatement measures) is a legal responsibility of the applicable municipal, county, or state road departments, along with the applicable air quality regulatory agencies (once again with EPA oversight).

C-71: The DEIS states “To further reduce fugitive dust, operators could establish and enforce speed limits (15 mph) on all project-required roads in and adjacent to the Project Area.” Merely considering some action is not adequate mitigation according to Council of Environmental Quality regulations. Could operators be required to post and establish speed limits and apply dust controls on unpaved roads pursuant to BLM’s authority to prevent unnecessary and undue degradation under FLPMA?

R-71: FLPMA Section 302 directs BLM to regulate the “use, occupancy, and development of the public lands,” and to prevent their “unnecessary or undue degradation.” Therefore, it is within BLM’s authority to regulate the operation of CBM development to prevent “unnecessary or undue” air quality degradation from unpaved road fugitive dust emissions by requiring the Companies to maintain appropriate speed limits. This management action is considered in several alternatives and is also a feature of the Preferred Alternative E for BLM managed oil and gas leases. See R-70.

C-72: The DEIS assumed the use of water to control fugitive dust from roads. No data were provided regarding: traffic volume; the quantity and availability of water supplies in the CBM emphasis area to water all such roads; the effect of evaporation and the short-term nature of this solution; the high maintenance effort of this control measure; the additional air pollutant emissions from the watering trucks; and the additional cost of these efforts. Are vehicle travel distances, trips generated, and roadway lengths consistent?

R-72: Details are provided in the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-73: The DEIS addressed fugitive dust from construction activities and during operation. Are there other pollutants of interest in this category?

R-73: The Technical Support Document - Air Quality Impact Assessment (Argonne 2002) addressed potential fugitive dust emissions during construction (i.e.; land clearing, road building, trenching, etc.) and operations (i.e.; well maintenance visits, coal mining activities, etc.). Other natural fugitive air pollutant emissions include CBM seepage, wildfires and coal seam fires, but these sources were not specifically included in the air quality analysis and may be considered part of the background concentration.

C-74: It is unclear how the transportation calculations were performed, but the DEIS apparently analyzed potential air quality impacts on the basis of traffic volume generated from project-related trips only. This omits existing residential, recreational, and additional traffic generated by population growth induced by the proposed project. Specifically, how did the DEIS address the additional number of roadways to be created, the number of project- and non-project related vehicle use of these roadways, and the residential or commercial development on nearby lands?

R-74: According to EPA's "Compilation of Air Pollutant Emission Factors" for unpaved road fugitive dust emissions (available online at: <http://www.epa.gov/ttn/chief/ap42/ch13/>), vehicle speed and weight, and road surface moisture and silt content were the most significant factors in predicting fugitive dust emissions. However, other than paving or other surface treatment of public roads (which is outside the jurisdiction of BLM), the principle factor that could be mitigated is vehicle speed. The description of modeling assumptions recognizes that induced or secondary growth related increases in vehicle miles traveled aren't included in the emissions inventory and model. See R-72.

C-75: Given the proposed well density, it is likely that all the grass would be contaminated with fugitive road dust. Local residences (ranches) are extremely vulnerable in these areas - dust will ruin our grass and harm our livestock. In Wyoming, CBM development-related traffic on a gravel road through our pasture has smothered us in Dust! Our animals have all been sick with respiratory problems.

R-75: See R-1 and R-70.

C-76: The DEIS did not describe the connection between air quality and health, both for workers and the general public, including air pollution impacts on mortality and morbidity from the particles, SO₂ and NO₂, within and beyond the CBM emphasis area. Differential health effects to sensitive sub-populations should also be considered. Recent studies demonstrate there is no threshold demarcating safe from unhealthy air; continuous damage functions should be used to evaluate the costs of increased air pollution, and the benefits from pollution reductions.

R-76: As disclosed in both the DEIS and FEIS, the NAAQS represent "the allowable concentrations of pollutants in the air specified by the federal government. The air quality standards are divided into primary standards (based on air quality criteria allowing an adequate margin of safety requisite to protect the public health) and secondary standards (based on air quality criteria allowing an adequate margin of safety to protect the public welfare) from any unknown or expected adverse effects of air pollutants." The primary (health) standards are designed to protect the health of sensitive populations, such as asthmatics, children, and the elderly.

Worker health is protected by standards promulgated and enforced by the U.S. Department of Labor, Occupational Safety & Health Administration (OSHA). BLM conducted or authorized activities must also comply with applicable OSHA regulations and standards.

Finally, an analysis of the "threshold demarcating safe from unhealthy air" and the use of "continuous damage functions ... to evaluate the costs of increased air pollution, and the benefits from pollution reductions" is clearly beyond the scope of the analysis.

C-77: The DEIS included no estimates of uncertainty in the estimation of air pollutant emissions factors and air quality modeling results. This is inadequate and incorrectly implies a level of certainty that defies physical reality. For example: a single year's meteorology was used; the actual location of wells, construction sites, roads and compressors was assumed; emissions will vary continuously; and the reactive chemistry of secondary particle formation is uncertain. The degree to which the anticipated development reflects emission factor limitations should be described. Deviations from these conditions should be noted and the impacts of these deviations described.

R-77: When reviewing these predicted air quality impacts, it is important to understand that reasonable assumptions were made regarding potential resource development, based on discussions with the regulatory agencies. In preparing this analysis, there is uncertainty regarding ultimate development (i.e., number of wells,

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equipment to be used, specific locations). The analysis was also based on a RFD scenario, including several assumptions as disclosed in both the DEIS and FEIS.

An exhaustive analysis of: multiple years of meteorology; temporal variations in emissions; “the reactive chemistry of secondary particle formation;” and “deviations from these conditions should be noted and the impacts of these deviations described” is clearly beyond the scope of the analysis. Furthermore, specific information necessary to identify “the actual location of wells, construction sites, roads and compressors” and “the degree to which the [actual] development reflects emission factor limitations” is simply not known at this planning analysis level. Accepted modeling protocol was developed in coordination with the regulatory agencies.

C-78: Although the DEIS states “all NEPA analysis comparisons to the PSD ... increments are intended to evaluate a threshold of concern, and do not represent a regulatory PSD Increment Consumption Analysis...,” it did not analyze any PSD increment consumption. Who is going to do the comprehensive PSD analysis, and will it include all the related development projects?

R-78: Under both FLPMA and the CAA, BLM is required to assure that its actions (either direct or by use authorizations) comply with all applicable local, state, tribal and federal air quality requirements, including PSD Class I and II increments. Therefore, it is very appropriate for the NEPA analysis to indicate if potential direct, indirect and cumulative air pollutant emission sources are likely to exceed PSD increments.

However, there is a formal regulatory process used to quantify PSD increment consumption, including the establishment of baseline pollutant concentrations, identifying which air pollutant sources consume increment, and using defined analysis methods to quantify actual PSD Increment Consumption. Therefore, as disclosed in the FEIS, “all NEPA analysis comparisons to the PSD ... increments are intended to evaluate a threshold of concern, and do not represent a regulatory PSD Increment Consumption Analysis...” It is the responsibility of the applicable air quality regulatory agencies to conduct a PSD Increment Consumption Analysis, with EPA oversight.

C-79: Population densities within and outside the CBM emphasis area vary widely. Did the air quality impact assessment address this issue?

R-79: Neither the DEIS nor the FEIS addressed air quality issues specifically in regards to population densities. A detailed description of assessment is provided in the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002)..

C-80: Why does Table 4-7 of the Wyoming DEIS Technical Support Document (Argonne 2001) only list mandatory federal Class I areas, but also mentions the review of potential visibility impairment in certain Class II areas as well? For example, Devil’s Tower National Monument is not listed in Table 4-7, but it appears to be the area of concern closest to the development project. Will increased transportation emission sources impact these Class I areas?

R-80: As disclosed in both the FEIS and its Technical Support Document - Air Quality Impact Assessment (Argonne 2002), potential visibility impacts from the Proposed Action and Alternatives were analyzed in several areas, described as “sensitive” by their managing agencies, including: mandatory federal PSD Class I areas; the Northern Cheyenne tribal designated PSD Class I Area; and numerous PSD Class II areas, including Devils Tower. However, both the National Visibility Goal and EPA’s visibility protection regulations apply only within 156 of the mandatory federal PSD Class I areas designated by the U.S. Congress on August 7, 1977. A site-specific analysis of potential “increased transportation emission sources” impacts to these areas is beyond the scope of the analysis (as specified under 40 CFR 1501.7).

C-81: The DEIS should have disclosed potential atmospheric deposition impacts to sensitive lakes in the Big Horn and Wind River mountains. We found no mention of this potential impact in the DEIS. In addition, more detail is needed in describing the ANC analysis methodology than was provided in the DEIS. Are there other air pollutants beside nitrogen and sulfur which can affect sensitive lakes?

The lake nearest the proposed Wyoming Project Area is also the most sensitive; should this be a concern? How was the distance determined? Are there other lakes which should be analyzed (such as lakes on National Park Service or U.S. Fish & Wildlife Service lands?

R-81: The Technical Support Document - Air Quality Impact Assessment (Argonne 2002) analyzed and disclosed potential atmospheric deposition (acid rain) impacts at six lakes within the Wind River Range, two lakes within the Absaroka and Beartooth Ranges, and two lakes within the Bighorn Range. All of these lakes were identified as sensitive to atmospheric deposition by the Forest Service, but no additional lakes were

identified for analysis in these mountain ranges. The FEIS and Technical Support Document (Argonne 2002) provide additional details on the impact analysis process.

C-82: The DEIS did not describe atmospheric deposition impacts as monitored by the National Atmospheric Deposition Program, with monitoring locations at Newcastle, Wyoming, or at the Little Big Horn Battlefield National Monument, Montana. BLM must thoroughly examine the impacts of increasing nitrates on surrounding ecosystems.

R-82: See R-81. Monitoring data are available from the National Atmospheric Deposition Program website at: <http://nadp.sws.uiuc.edu/nadpdata/>. Other than the increasing trend of inorganic nitrogen at BLM's Newcastle, Wyoming, monitoring site (averaging 1.7 kilograms per hectare per year, or kg/ha-yr; ranging from 0.8 to 2.5 kg/ha-yr), four other locations either showed no trends, or lowering trends in sulfate ion (averaging from 1.5 to 3.5 kg/ha-yr), inorganic nitrogen (averaging from 1.0 to 1.75 kg/ha-yr), and field pH measurements (averaging from 5.0 to 5.2).

C-83: The DEIS appropriately noted the potential for visibility and atmospheric deposition impacts within sensitive Class I and Class II areas located in this region, but no further effort was made to provide an quantitative analysis that would resolve these air quality concerns.

R-83: A quantitative analysis of potential visibility and atmospheric deposition impacts within sensitive Class I and Class II areas located in the CBM emphasis area has been included in the FEIS, as detailed in its Technical Support Document - Air Quality Impact Assessment (Argonne 2002). See R-81.

C-84: The DEIS did not describe visibility conditions throughout the CBM emphasis area as monitored by the Interagency Monitoring of PROtected Visual Environments (IMPROVE) Program, which have demonstrated that nitrate levels for the worst visibility impairment days are increasing at an alarming rate. The DEIS should analyze the potential for "plume blight," using the VISCREEN model.

R-84: As one of the founding agencies of IMPROVE, BLM is well aware of its visibility monitoring program, and the national monitoring trends. In addition, the visibility impact analysis included in both the DEIS and FEIS were indeed based on "natural visibility conditions" derived from the IMPROVE optical and aerosol data bases (used in

the seasonal Federal Land Managers' Air Quality-Related Values Workgroup [FLAG] screening method), and actual hourly observed optical data collected in the Badlands and the Bridger wilderness area (used in the daily FLAG refined method).

A review of IMPROVE visibility data collected in the Project Area since 1988 (Malm 2002; <http://vista.cira.colostate.edu/improve/Publications/Reports/2000/2000.htm>) shows no significant change (either deterioration or improvement) at the Bridger Wilderness Area, but significant improvements in the "clear" days at the Badlands Wilderness Area and Yellowstone National Park. An additional review of bi-weekly nitrate ion concentrations collected by IMPROVE aerosol samplers from March 1988 through November 2001, show that the 2000 ad 2001 annual minimums (occurring in the fall) were greater than all previous years, but the 1999 maximum (occurring in the spring) was the lowest of all thirteen years, and the 2000 maximum was lower than four other years on record. Details are provided in the combined Montana and Wyoming Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-85: The Wyoming DEIS uses 1.0 dv as a "just noticeable change" visibility impact threshold, but the deciview metric is not easily related to gaseous and aerosol concentrations.

R-85: The Technical Support Document - Air Quality Impact Assessment (Argonne 2002) compared the seasonal FLAG screening method results to 0.5 dv at the request of the Wyoming stakeholder group, the daily FLAG refined method compared potential impacts to the 1.0 dv "just noticeable change" significance threshold, as described by Pitchford and Malm (1994) and required by the EPA Regional Haze Regulations. Although it is logical more days would be predicted to exceed half of a "just noticeable change" threshold (0.5 dv), these additional days would not normally be perceptible. Potential changes in gaseous and aerosol air pollutant concentrations were reported in the FEIS. However, potential visibility impacts from changes in gaseous and aerosol air pollutant concentrations are not linear. Therefore, the dv metric (Pitchford and Malm 1994) was used to indicate potential changes in visibility

C-86: Can hydrocarbon emissions forming organic aerosols which impair visibility? Are there other pollutants that should be included in the visibility impact analysis? Other secondary pollutants?

R-86: Since produced natural gas is nearly pure methane, with little or no liquid hydrocarbons or sulfur compounds, direct VOC emissions, objectionable odors,

or secondary organic carbon aerosols are not likely to occur.

C-87: Are there meteorological factors which contribute to a day v. night visibility issue? The DEIS should define what is considered to be a significant visibility impact. The National Park Service considers any exceedance of 0.5 dv to be significant. Use of the 1.0 dv value ignores those days when a perceptible change in visibility may occur at lower thresholds.

R-87: See R-85. Air pollutant concentrations and relative humidity conditions predicted to occur at night were assumed to occur in daylight. In fact, daylight conditions can only occur between 8.75 and 15.5 hours per day throughout the CBM emphasis area. The FEIS compared potential direct, indirect and cumulative visibility impacts from the Proposed Action and Alternatives using the seasonal FLAG screening method (based on both the FLAG and WYDEQ-AQD relative humidity and background total optical extinction “natural conditions”), as reported in the Technical Support Document - Air Quality Impact Assessment (Argonne 2002).

C-88: The DEIS does not address potential impacts to climate, and the calculation of the “so called” greenhouse gas potential is not mentioned. For example: Will all of the methane emissions be reduced if coal mining follows the predicted course? Which of the underlying coal beds will be mined? Will releases during exploration and well development be greater than that released from future surface mining? Where are the potential leaks in this process? What is the expected greenhouse gas equivalent of methane leakage? Will production gas be “flared” if a well is not connected to a pipeline, or if a pipeline is not available to transport gas to market? Does the formation of CO₂ by burning the pipeline gas compensate for the fugitive methane emissions?

R-88: Given the preliminary and speculative nature of potential air pollutant emissions from the Proposed Action and Alternatives, it simply is not possible to quantify the potential “greenhouse gas emissions, and their possible effects, that will reasonably result from the project alternatives (including both direct project emission, and by producing fuels that will ultimately be burned).” Although the proposed Alternative’s project sources and non-project sources emit carbon dioxide and methane, climate impacts are anticipated to be small from implementation of any of the proposed Alternatives. Climate impacts may even be beneficial to the extent that: Development of the CBM resource

reduces the natural emissions of methane from coal mines. Additionally, the use of CBM displaces combustion of coal or oil, both of which emit more carbon dioxide than methane per unit energy produced. Finally, details regarding actual operations such as flaring, can not be adequately quantified and thereby are excluded from the analysis. It may be simply assumed that the purpose of CBM development is to recover gas and flaring will therefore be minimized by companies.

C-89: The DEIS did not examine all viable alternatives and mitigation strategies to further reduce potential air quality impacts as required by NEPA. The Wyoming BLM suggested only two mitigation strategies..

R-89: The DEIS included “viable alternatives and mitigation strategies to further reduce potential air quality impacts as required by NEPA,” See Chapter 2 discussion on the development of alternatives.

C-90: The BLM should require all new development to use the most modern and least-polluting equipment reasonably available. Further committed mitigation measures should include: diesel retrofit or re-powering technologies on all heavy-duty diesel engines; requiring all diesel engines to use low sulfur diesel fuel; rigorous emission standards on all diesel-powered generators; a prohibition of venting or flaring methane wells; requiring flue gas injection to enhance CBM production, and to sequester CO₂ emissions; and an examination of alternative energy sources to provide necessary project power (alternatives include the use of solar panels, renewable energy technologies, and hydrogen fuel cells).

R-90: The U.S. Congress has limited BLM’s authority to require air pollutant emission limits on the actions it authorized under FLPMA. In addition, the U.S. Congress has delegated implementation of the CAA (including the determination of appropriate control measures) to applicable local, state and tribal air quality regulatory agencies, with EPA oversight. BLM simply does not have legal authority to enforce the CAA, such as requiring “all new development to use the most modern and least-polluting equipment reasonably available.

C-91: Northern Cheyenne tribal lands are designated as a PSD Class I Area, but the DEIS did not identify any mitigation measures necessary to protect that special status. Pennsylvania Power & Light monitors air quality on the northern boundary of the Reservation to protect the pristine air quality from power plant discharge. If air quality problems occur from CBM development, similar monitoring (with associated costs) will also be necessary along the southern boundary of the Reservation.

R-91: Both the FEIS and its Technical Support Document - Air Quality Impact Assessment (Argonne 2002) described potential air quality impacts to the Northern Cheyenne designated PSD Class I Area. The FEIS also identifies management features in the Preferred Alternative to mitigate air quality impacts, including specific measures in the Northern Cheyenne Mitigation Appendix and the Air Quality Modeling Appendix.

C-92: The DEIS did not address noise abatement in both residential and industrial (occupational) areas, nor the impact of occasional road maintenance. Noise and air quality impacts must be maintained below the minimal levels prescribed in DEIS Table 2-2 (Alternative Management).

R-92: In addition to the requirement for electrical compression if noise levels exceed the thresholds identified under Alternative E (Preferred Alternative), the following potential mitigation measure has been included for all other Alternatives: Where noise impacts to sensitive receptors is an issue, noise levels could be required to be no greater than 50 decibels measured at a distance of one-quarter mile from the appropriate field (booster) compressor. This may require the installation of additional engineering controls at these locations.

C-93: The quiet in the CBM emphasis area is priceless now. Fifty decibels may not seem like much in Washington, DC, but it is noisy here. Compressor stations should be required to use the best available technology on these noisy engines, no matter what the cost, and compressor stations should not be placed within one mile of habitable buildings. What are the penalties if the 50-decibel level is exceeded?

R-93: Although the federal Noise Control Act was passed in 1972, there are no applicable federal ambient noise standards. EPA has identified noise levels of 55 decibels outdoors and 45 decibels indoors as preventing activity interference and annoyance. These levels of noise are considered those which will permit spoken conversation and other activities such as sleeping, working and recreation, which are part of the daily human condition. EPA has also estimated that 50 decibels is a typical average for a small town, suburban environment.

Although the State of Montana's only noise standard is related to occupational health and safety (Montana Environmental Quality Rule 17.74.101), which limits noise between 90 and 115 decibels, Montana's Major Facility Siting Act, and Air Quality Permits for Portable and Stationary Sources, all require a description of anticipated peak and average noise levels, and a description of the mitigative measures to reduce noise impacts. As part of these permits, Companies may be required to apply Best Management Practices to reduce potential noise impacts.

Cultural Resources

Comments and Responses

Comment 1 (C-1): CBM development will affect archaeological resources. The richness and importance of these resources is not presented in the DEIS.

Response 1 (R-1): Archaeological sites, which are included in the term Cultural Resources in the report, are addressed in the FEIS. The FEIS illustrates the rich archaeological heritage in the Powder River and Billings RMP areas (see Chapter 3, Cultural and Historical section), where it is estimated that 364,535 archaeological sites should exist in a 13-county region. This section also highlights archaeological site diversity in the study area and the potential time depth of archaeological sites.

Cultural resources are unique to a particular area. During the leasing process, known important cultural resources areas are either excluded from the lease or protected by the use of a No Surface Occupancy stipulation. However, if important cultural resources are identified after issuance of a federal lease, they are avoided or mitigated through data recovery.

Under the National Historic Preservation Act (36 CFR 800(a)(1)), Native American Graves and Repatriation Act, and other laws and regulations concerning cultural resources, Native American locations and other cultural locations, such as archaeological sites, must be evaluated for their importance. Sites and locations that are determined significant must then be mitigated—preserved from damage or professionally excavated to recover information that might be lost. Because of the high cost of excavation, most CBM projects would be designed so that archaeological sites are not disturbed. Significant Native American locations are also considered and measures taken to preclude or reduce disturbance.

As stated earlier, the exact mitigations will be designed for the site-specific locations.

C-2: Why were cultural resources treated similarly and equally in terms of type, composition, and significance, when cultural resources are not equal in significance?

R-2: Cultural resources are treated similarly and equally in the EIS to generate a general understanding of potential impacts from CBM development under various alternatives. The FEIS does acknowledge that cultural resources are not

equal in significance, as stated in Chapter 4, Cultural Resources.

Specific cultural resources and how they might be impacted are not determined until site-specific drilling or development plans are proposed.

C-3: The DEIS also relies on incomplete, outdated, and misleading information about the potential for cultural resources and is inadequate; it is based on reports, which in many cases are outdated.

R-3: Archaeological site information used in the report was supplied by the Montana State Historic Preservation Office (SHPO), which maintains a register of all identified sites within each of Montana's counties and all sites that are listed or eligible for listing on the National Register of Historic Places (NRHP). Additional information was obtained from BLM survey data.

C-4: The DEIS states, "Lease stipulations, which require inventory and mitigation measures, can benefit cultural resources by delineating and minimizing adverse impacts on the resources." How would lease stipulating provide protection to cultural resources?

R-4: Both the BLM and the State oil and gas leases include a stipulation that requires a survey or inventory be conducted before approval of permits authorizing surface disturbing activities.

C-5: A fundamental problem exists in the BLM's leasing process. When a "split estate" situation occurs, BLM and the operators are required to conduct cultural resource surveys. The title to any discovered cultural resource belongs to the surface owner and any cultural resource evaluation and/or monitoring would have to be conducted with the surface owner's consent.

R-5: If a landowner refuses access to the BLM to conduct cultural resource work, the BLM still must comply with Section 106 before approval of a given APD is issued. BLM would notify the landowner that the APD approval would not be given until Section 106 responsibilities have been completed.

C-6: Surface occupancy is prohibited within paleontological sites on BLM minerals in the planning area. It seems that historic properties are not given the same consideration.

R-6: A cultural resource No Surface Occupancy (NSO) stipulation was adopted under the 1994 ROD for the oil and gas RMP amendment. This stipulation prohibits use and surface occupancy within sites or areas designated for conservation use, public use, or sociocultural use.

C-7: What, if any, binding stipulations exist regarding unknown cultural resources? If there are none, how will

the RMP process afford historic properties reasonably effective consideration in avoiding, minimizing, or mitigating effects under the ROD for this EIS? Who is going to develop and implement a cultural resource location and significance model?

R-7: The lease stipulations that were adopted as part of the 1994 ROD for oil and gas RMP amendment for cultural resources include Lease Notice and a NSO measure. (See **R-6** for NSO explanation.) The lease notice states that the Surface Management Agency is responsible for assuring that the leased lands are examined to determine if cultural resources are present, and to specify mitigation measures. Guidance for application of this requirement can be found in NTL-MSO-85-1. The BLM typically requires a cultural resources inventory prior to submission of the APD to identify any unknown cultural resources. The results of the inventory are then used to decide the type of mitigation necessary for any discovered important cultural resource sites.

C-8: What specific approaches will be used in identifying, treating, and handling sacred, historic, and traditional cultural properties? The document leaves unaddressed the identification of appropriate mitigation as it relates to the divergent tribal interest, topography, and concentration of sites.

R-8: Project-specific mitigation of sacred, historic, and traditional cultural properties or cultural resources related to tribal interest, topography, and concentration of sites will be addressed with the Native American tribes who have an interest in the area being considered for development. If sacred or traditional sites exist in the area, the affected Tribe will be consulted prior to determining appropriate treatment. Additionally, the Preferred Alternative has included specific Native American mitigation measures for Cultural resource impact prevention (see Chapter 2).

C-9: How has this EIS process satisfied Section 106 and Section 110 requirements of the National Historic Preservation Act (NHPA)?

R-9: The FEIS is only part of the process toward meeting requirements of Section 106 and Section 110. The FEIS discloses the cumulative effects predicted to occur to cultural and other resources. The FEIS projects the number of cultural resources that could be impacted by total CBM development in the study area and Areas of Critical Environmental Concern (see Chapter 3 in the Cultural and Historical section). The FEIS also states that that important cultural resources must be considered and mitigated before CBM development takes place through either avoidance or mitigation (see Chapter 4, Cultural Resources section).

Site-specific impacts on cultural resources will be analyzed as part of the NEPA document prepared for each oil and gas action as required in the lease notice.

C-10: Shouldn't all of the parks and cultural sites in the state be listed? Will the Medicine Rocks State Park on Fort Keogh be listed? There are many more cultural areas that are not listed here.

R-10: Only the parks and designated cultural sites, such as BLM's ACECs, with the greatest possibility of being affected by CBM activities were listed in the document. Many cultural resource areas and sites are not listed in public documents to conceal their location to reduce the vandalizing and stealing of cultural sites and artifacts.

C-11: Why weren't the Northern Cheyenne and Crow addressed in the DEIS and why is the information that is included about the Northern Cheyenne and Crow misleading?

R-11: The Final EIS includes information provided by the Northern Cheyenne and Crow Tribes. Other information found in Chapters 3 and 4 was derived from the Ethnographic Study conducted for the EIS and from other published documents or websites.

Geology and Minerals

Comments and Responses

Comment 1 (C-1): What is the potential for coal bed methane resources being drained from unleased or undeveloped land that is contiguous to land on which CBM is being developed? What about the drainage of resources from federal land, state land, and Crow and Northern Cheyenne reservation land from development outside the reservation, as well as development of federal minerals within the reservation?

Response 1 (R-1): The possibility exists that drainage of unleased or undeveloped minerals contiguous to CBM development could occur, this would include tribal minerals. It is the mineral lessee's responsibility to investigate protective measures that are available. As part of BLM's trust responsibility to the tribes, BLM must identify if drainage may be occurring and inform the affected parties. Issues relating to the drainage of CBM resources from undeveloped lands are discussed within Chapter 4, Assumptions Common to All Alternatives, Geology and Minerals. BLM Project Plan requirements include provisions for operators to conduct drainage evaluations (modeling) prior to being issued an APD permit. Additionally, developments adjacent to the reservations will be required to maintain monitoring wells as prescribed by the BLM. Furthermore, if monitoring or reservoir modeling indicates drainage of CBM resources is occurring, the BLM would enter negotiations with the operator and the Tribe to protect the correlative rights of the Tribe. BLM requirements could include reducing production rates, shutting in the well, establishment of communitization agreements, or operator payment of compensatory royalty.

C-2: There is no discussion of methane drainage pertaining to the Northern Cheyenne Reservation in the Environmental Justice section.

R-2: The discussion of potential drainage regarding the Northern Cheyenne Reservation is contained in the Indian Trust Assets section of Chapter 4.

C-3: Concern was expressed over the buffer zones, or lack of buffer zones, around federal and state mineral resources and the appropriateness of buffer zones for development near reservation land. Also, how would mitigation measures be implemented if monitoring indicated that reservation resources were being drained?

R-3: The use of buffer zones and the implementation of mitigation measures relative to impacts on Tribal lands is discussed in Chapter 2 under Alternative E—Preferred Alternative; in Chapter 4, Indian Trust and Native American Concerns; and within the Monitoring Appendix. Further information is provided in the response to Comment 1.

C-4: There is a need for increased monitoring to protect the land surface and the land surface owner. The alternative adopted should incorporate efforts by operators to minimize surface impacts through the use of clustered well pads and production facilities, compensation to landowners for loss of land use, compensation to landowners for legal fees, the use of lease stipulations and conditions of approval, and the restoration of land once development and production activities are abandoned.

R-4: Monitoring of oil and gas lease activities and subsequent impacts from those activities are an integral part and responsibility of the permitting agencies. The inspections are intended to determine compliance with approved permits and regulations, the effectiveness of mitigation measures, and the need to modify mitigation measures. Monitoring activities associated with different resources are described in the Monitoring Appendix of the Final EIS.

CBM operators are required by the BLM and the State to consult with private surface owners during preparation of Project Plans and encouraged to include Best Management Practices with their Plans. In addition to lease stipulations, agency requirements designed to reduce or eliminate impacts are described in Alternative E, Preferred Alternative of Chapters 2 and 4 of the Final EIS. A list of mitigation measures available to BLM and the State is found in Table MIN-5 in the Minerals Appendix of the EIS.

C-5: Agencies should require complete reclamation of all disturbed areas and sufficient bonding to cover the reclamation of land disturbed by CBM development and production. Will bonding be required to cover aquifer recharge or water depletion? Will bonding be required to cover weed control and to protect neighboring lands from the spread of weeds? Bonding requirements relative to CBM development should be clarified within the EIS.

R-5: Reclamation of disturbed areas is developed in consultation with the surface owner or surface management agency. Federal or State bonds are not terminated until reclamation work has been judged to be successful by the surface owner or surface management agency.

BLM and the State have the authority and flexibility to determine the appropriate amount of bond coverage for

oil and gas operations. Many factors are considered by the agency when determining the amount of bond coverage. Regulations usually guide or determine when and how an agency can use the bond.

C-6: The impacts from CBM development in Wyoming should be included in the assessment of cumulative impacts relating to Montana CBM development. This should include an accurate assessment of the number of CBM wells projected to be developed in Wyoming.

R-6: The cumulative effects of Wyoming CBM production on Montana are addressed under the appropriate resource topics of Chapter 4. It is also included in the list located in the Minerals Appendix under the heading of Cumulative Projects Evaluated—Wyoming CBM Production. The EIS analyzed 50,000 projected CBM wells in Wyoming as part of the cumulative analysis.

C-7: Did the BLM consider CBM development on only BLM-administered oil and gas estate or on all lands covered by the EIS, including private lands? CBM development on private lands may impact state and BLM lands because of cumulative increases in road densities, traffic effects, air and water degradation, increased fire hazard, and many other factors.

R-7: The FEIS considers the impacts from future CBM exploration and development for all lands as part of the cumulative impact analysis.

C-8: Can mud from drilling be disposed of on-site without and owner permission? Who is responsible if damage occurs to adjoining land? Are radioactive materials used in fracturing fluids and what effect would they have on groundwater and subsequently on surface water after they are pumped back to the surface? Was the Alberta Energy and Utilities Board G-50 document, which addresses the disposal of oilfield waste, consulted when this study was being done?

R-8: The disposition of oil field waste is discussed in Chapter 4, Solid and Hazardous Waste, and in the Solid and Hazardous Waste Appendix. Generally, fracturing fluids consists of water and/or inert gasses such as nitrogen or carbon dioxide. These are not hazardous or radioactive and would not be expected to affect area groundwater. Fracturing fluids typically are recovered and stored in the site reserve pit prior to disposal. The fluids are disposed of in an authorized disposal facility. The Alberta Energy and Utilities Board G-50 document was not used as a reference because it deals with the disposal of drilling wastes in Alberta, Canada and does not have

jurisdictional applicability in Montana. Agency responsibility for regulating solid and hazardous wastes is discussed in Chapter 1.

C-9: Are compressors used for activities other than pumping and drilling?

R-9: Compressors are used for the transmission of gas through pipelines as well as for drilling operations. The use of compressors is discussed in the Minerals Appendix, Reasonable Foreseeable Development Scenario—Alternatives B, C, D, and E, and in Chapter 4, Assumptions Common to All Alternatives.

C-10: Why was horizontal drilling not considered in the EIS, as the use of horizontal drilling would lessen surface impacts?

R-10: The use of horizontal drilling for producing methane from Powder River Basin coal seams has not proven to be successful with current technology and techniques, because of factors such as coal seam characteristics and the shallow depth.

C-11: All of the alternatives are based on an RFD scenario of 18,300 wells, despite the fact that the RFD scenario in the Minerals Appendix estimates that the RFD scenario may range between 10,000 to 26,000 wells. A recent promotional study for the CBM development industry (Anderson ZurMuehlin) forecast 9,550 wells in production over 10 years of CBM development, versus 18,300 over 20 years. Justification for the number used should be included in the EIS.

R-11: The RFD scenario in the Minerals Appendix accounts for all potential wells (26,300) of that 18,300 CBM wells are predicted to be developed on BLM and State minerals over the next 20 years.

C-12: What is the justification for using a predicted well life of 20 years?

R-12: A detailed explanation for an assumed 20 year well life is included in the Assumption Rationale section of Chapter 4 in the Final EIS.

C-13: A better estimate is needed of the number of wells predicted for Carbon County and their expected impact.

R-13: The number of wells predicted for Carbon County is based on current available data and included in the Minerals Appendix. The assumptions are based on coal volumes and gas content.

C-14: Is there any data available that would give anticipated production figures?

R-14: Predicted production numbers for CBM development within the Powder River Basin are included in the Minerals Appendix.

C-15: The DEIS uses a time period of 5 to 8 days for well installation and completion. J. M. Huber in a proposal for a test well in Gallatin County estimated “total days with rigs operating on location are estimated as 27 to 40 days.”

R-15: The estimated 5 to 8 days for each well installation used the FEIS is an average based on best available data. Site-specific circumstances will result in differences to the average used. Gallatin County coals are deeper than Powder River Basin coals and will require longer periods of time to drill to such depths. Additionally the J.M Huber proposal calls for several wells to be drilled, not just one. Therefore, the total days may represent cumulative time if the wells are drilled in succession.

C-16: Why does Montana assume that all dry holes would be drilled in the first 5 years?

R-16: The RFD estimates that all dry holes will be drilled in the first 5 years because the majority of unknown or suspect CBM resources will be identified during this period of development. Most of the exploration holes will be drilled during this period, providing a better understanding of CBM resources in the Powder River Basin and resulting in reduced chances of drilling a dry hole.

C-17: Will diesel fuel or methane generated from CBM production be acceptable for fueling generators and compressors?

R-17: The types of fuels allowed under Alternative E are discussed in Chapter 2, Alternative E—Preferred Alternative and in Chapter 4, Air Quality and Climate. The use of produced methane or other natural gas for fueling generators and compressors is required under Alternative E as a means for minimizing impacts on area air quality.

C-18: Will beam-lift pumps be allowed for extracting CBM water?

R-18: There are no restrictions on the use of beam-lift pumps provided the provisions for air quality, visual, and noise resources are maintained in compliance.

C-19: Will hydraulic fracturing be allowed and if not, will it be made illegal?

R-19: A discussion of hydraulic fracturing is included in Chapter 4, Assumptions Common to All Alternatives. It is not anticipated that hydraulic fracturing would be part of the standard CBM completion practices and this EIS will not make it illegal for conventional oil and gas wells. Our assumptions for the EIS are that CBM operators

would be allowed to use small amounts of water to “clean up” residue created by drilling operations from a potentially productive coal seam.

C-20: Please define the terms “deeper coal seam,” “shallow coal seam,” and “drill directionally.”

R-20: The terms “deeper coal seam,” “shallow coal seam,” and “drill directionally” are discussed in Chapter 2, Alternative E—Preferred Alternative. The term “deeper coal seam” is used in the FEIS to designate a coal seam that is deep enough that it can be drilled to at a directional angle from a well pad in one spacing unit to another spacing unit. This avoids the need for constructing additional roads and well pads. The exact depth that the term “deeper” applies to is relative and will vary according to field spacing requirements and local geology.

The term “drill directionally” refers to the technique of drilling at an angle from a location at the surface to a different subsurface location at a specific target depth. The degree of angle that a well can be drilled is limited, which is why this technique is not employed for shallow coal seams.

The term “shallow coal seams” refers to those coal seams that are too shallow to drill to directionally given the area geology and spacing limitations.

C-21: How much energy does it take to develop and produce CBM? Is there a net energy gain or loss?

R-21: The amount of energy expended to drill and produce CBM would be less than the amount of CBM projected to be produced resulting in a net energy gain.

C-22: Where does the money from CBM development go?

R-22: Money derived from the sale of CBM is used to pay state and federal taxes and royalties; cost of developing the resource; employee wages; investment in future projects, and pay dividends to their investors.

C-23: What is the benefit to Montana from CBM development and how is the federal mineral royalty calculated? Should fiscal year 2001 federal mineral royalty data be included in the EIS?

R-23: Specific benefits to the State derived from CBM development are discussed under the heading of Socioeconomics in Chapter 3. Federal mineral royalties are based on the volume of product and product price, and are represented within the data contained in the Social and Economic Values section of Chapter 4 of the FEIS. Fiscal year 2001 data is not included because it was not available when the document was prepared.

C-24: Will the clustering of surface facilities, using mufflers for compressors, and using existing facilities be required to reduce resource impacts?

R-24: The clustering of facilities and sharing of roads and utility corridors to minimize surface impacts is required under all alternatives evaluated, as discussed in Chapter 4, Assumptions Common to All Alternatives. The use of mufflers and noise control provisions are discussed in Chapter 2, Alternative E—Preferred Alternative.

C-25: Why doesn't CBM fall under the same rules as other forms of natural gas and do existing oil and gas leases adequately consider mitigation measures and lease stipulations that would apply to CBM development?

R-25: Existing state and federal regulations addressing oil and gas lease operations also apply to CBM operations. Additional mitigation measures may be needed to address impacts from CBM operations. Oil and gas leases issued by the state and BLM can include stipulations to protect resources from oil and gas including CBM operations. BLM and state approved permits can include mitigation measures in the form of requirements or restrictions to proposed lease operations.

C-26: What is the percentage of federal leases within Rosebud, Custer, Big Horn, and Powder River counties that are likely to be leased for CBM development?

R-26: Federal oil and gas leases include the rights to explore for and develop all forms of oil and gas, such as CBM, unless specifically exempted in the lease. It would be difficult for BLM to predict the percentage of federal leases that would be issued for CBM development because the lessee is not required to provide that information until a drilling application is submitted to BLM.

C-27: Site-specific analysis must accompany every leasing and permitting proposal in the planning area to minimize impacts on all resources. This should include an integrated approach to resource protection. Project Plans should be mutually agreed upon rather than “developed in consultation.” The tribe should be consulted on all Project Plans that would be implemented within the 1851 Treaty Boundary.

R-27: The requirement for developing and implementing a Project Plan for each proposed CBM development that includes more than one well per 640 acres is discussed in Chapter 2, Alternative E—Preferred Alternative. The Project Plan would be

required to demonstrate how impacts on area resources would be minimized or eliminated.

A Water Management Plan also is required to be included in the Project Plan and must address how the operator would manage CBM-produced water to minimize impacts and comply with water quality laws. The Project Plan is to be “developed in consultation” with the affected surface owner(s) and other involved permitting agencies to allow all involved parties and agencies the opportunity to provide input and express their preferences on how resources should be managed and impacts minimized. It is, however, the responsibility of the CBM operator to implement the approved plan in accordance with applicable laws, lease stipulations, and permit conditions of approval.

Where CBM activities would affect reservation lands, CBM operators would be required to consult with tribal representatives in preparing the Project Plan and document the results of that consultation within the plan.

C-28: Maps for coal on the Crow Reservation indicate there is no coal capable of producing methane in the Little Bighorn Drainage. Additionally, clinker deposits are abundant on the reservation and Map 3-1 of the DEIS does not show any clinker outcrops. The EIS does not list the Monarch/Canton coal as being present in the Upper Tongue River Unit.

R-28: As shown in the Geology and Minerals section of Chapter 4 in the FEIS, coals that are potentially capable of producing CBM are present on the eastern edge of the Crow Reservation. The map in Chapter 3 does show that Wyodak-Anderson and Colstrip Coal clinker deposits are present on reservation land. These maps only show major clinker deposits. Undoubtedly, other minor clinker deposits are present that are not shown. The Monarch/Canyon is present within the Upper Tongue River Unit in the Montana portion of the Powder River Basin and is so indicated in Chapter 3, Geology and Minerals, Tongue River Member. The Monarch term is another name given to the Canyon section of the Upper Tongue River Unit.

C-29: Please clarify the use of the word “normally” as used under the heading Lands and Realty in Chapter 4. Include an option of ensuring, rather than simply encouraging, linesharing in the preferred alternative.

R-29: The use of the word “normally” within the text of the FEIS means “usually” but not necessarily “always.” “Linesharing” is encouraged under Alternative E—Preferred Alternative, but because of site-specific circumstances may not always be possible. Project Plans will be evaluated to ensure that, where protected, “linesharing” will be accomplished.

C-30: Under the heading of Indian Trust and Native American Concerns in Chapter 4, an MBMG report is referenced with respect to a discussion of “methane liberation.” The author of this paragraph used the MBMG report as a part of his/her basis for his/her assumption on “methane liberation.”

R-30: The MBMG report was used as a source of information for the discussion of “methane liberation” and the distance that it might occur from a CBM well.

C-31: Within Chapter 3 it states the shales of the Colorado and Pierre Formations could perhaps accept produced water under injection pressures higher than fracture pressure. This statement should be clarified to explain the effects of fracturing a shale. Injecting at greater than fracture pressure fractures the formation and may cause communication with other members of the formation. Conventional oil and gas practices do not allow injection of water about the fracture gradient of any formation.

R-31: The comment is correct in that conventional oil and gas practices do not allow the injection of water above the fracture gradient of a formation when conducted to enhance oil or gas production. The referenced text, however, is meant to state that because of the characteristics of the shales and area geology, the disposal of CBM-produced water within a CBM water disposal injection well could perhaps be accomplished in these shale zones without exceeding the fracture gradient of the surrounding confining formations. The sentence has been removed in the FEIS.

C-32: Within Chapter 4 is a statement concerning the unknown location of exploratory wells. Haven’t all the requests for exploratory wells been filled? Why aren’t the locations known?

R-32: The referenced statement relates to the unknown location of future exploratory wells, not existing exploratory wells. The locations of existing wells are known.

C-33: Who has liability and responsibility for loss of life or property damage caused by explosions from CBM wells? Would the developer be liable for damage done other property or lands?

R-33: Liability for damage to property or loss of life resulting from CBM operations will depend on the particular circumstances of the incident.

C-34: What is the difference between communitization and unitization?

R-34: Communitization is pooling of mineral acreages, based on the spacing for a well or wells, set by the state or BLM. Unitization is pooling of mineral acreages proposed by a company to facilitate the efficient development of a reservoir based on geology and reservoir characteristics of a producing formation or formations.

C-35: What criteria will the MBOGC use to determine allowable spacing for CBM wells and what will be the response of the BLM and State in the event that CBM operators petition to have the well spacing acreage reduced?

R-35: Issues relating to well spacing are discussed in the Minerals Appendix. Requests by operators for adjustments to the spacing requirements would be evaluated on a case-by-case basis with the operator responsible for justifying the request. The primary factor relating to spacing adjustments would be the efficient drainage for a spacing unit by a well that is dependant on local reservoir parameters.

C-36: If there are three coal seams, would this result in more than one well per 80 acres?

R-36: Yes, if CBM is produced from more than one coal seam, there would be more than one well per 80 acres because a separate well would be drilled into each coal seam. Under Alternative E-Preferred Alternative, the separate wells in the 80 acre spacing unit would have to be located on the same well pad. Locating more than one well on a well pad reduces the number acres disturbed by construction and reduces impacts to other resources.

C-37: The EIS states that a Project Plan will be required if densities are greater than one well per 640 acres. Does this actually mean wells or well sites?

R-37: Project Plans would be required when the well spacing is less than one well per 640 acres. For example, when the spacing was changed to allow the drilling of one well per 160 acres, this would require a Project Plan.

C-38: How many wells can be permitted and still sustain the land and animal life that exists today?

R-38: The maximum number of wells that could be drilled and still sustain current resource levels was not analyzed in the EIS. Implementation of Alternative E-Preferred Alternative, including the mitigation measures and monitoring activities, would allow for the efficient and effective production of CBM while protecting and maintaining other resources and land uses.

C-39: Could MBOGC establish a phased-in number of CBM gas permits to be granted per year with ongoing monitoring by MDEQ, with the possibility of issuing

future permits contingent on the level of impacts on air, land, and water?

R-39: Phased-in development as an alternative approach is discussed in detail in Chapter 2 under Alternatives Considered But Not Analyzed in Detail. The ongoing monitoring measures that will be conducted by various agencies and the operators are presented in the Monitoring Appendix. If monitoring indicates that impacts have occurred, operators would be required to implement measures for remediating impacted areas and mitigating future impacts.

C-40: The EIS identifies general operating standards and mitigation measures that will be applied to CBM development in Montana. BLM and the state should take advantage of the expertise and information acquired by the Wyoming offices. The Montana BLM and the state should review this information and incorporate, by reference if preferred, those measures that are applicable to Montana's future development.

R-40: Data from Wyoming was reviewed and, where applicable, used in developing the FEIS.

C-41: What are the rights of landowners versus mineral owners where split estates are involved? Will split estate surface use agreements between landowners and coal bed operators be required? Will every contractor working for the CBM operator be required to obtain access permission from the landowner? Can an operator or group of operators be denied access across state or federal lands of a lease? Chapter 3 discusses the liability of a "landowner" under the Comprehensive Environmental Response, Compensation, and Recovery Act (CERCLA). Who is a "landowner" in a split estate? Is the surface owner supposed to take the liability for the leasing action of the mineral owner? Please clarify this. In most cases of a split estate, the mineral owner is the dominant owner and the surface owner is subservient.

R-41: Split estate issues are discussed in Chapter 4 in Assumptions Common to All Alternatives and in Lands and Realty. Certain issues relating to split estates are also discussed in Chapter 3. Where split estates are involved, both the landowner and the mineral owner have certain rights. The mineral owner must enter into a surface agreement with the surface landowner, which sets forth the provisions under which the mineral owner will conduct drilling and development activities with respect to surface disturbances. The agreement also sets forth how the mineral owner or operator will minimize or mitigate surface disturbances.

The mineral owner or operator has the right to access provided that they enter into a surface agreement and comply with the provisions of their permit including any lease stipulations or conditions of approval. Under Alternative E—Preferred Alternative, a Project Plan would also be developed by the mineral owner or operator in consultation with the affected surface owner(s) and other involved permitting agencies to allow all involved parties and agencies the opportunity to provide input and express their preferences on how resources should be managed and impacts minimized. It should be noted that these provisions do not take effect at the time of leasing but rather are implemented when an operator submits an application to drill. Contractors working for the operator are also subject to the same agreements and provisions as the operator.

Issues relating to solid and hazardous waste are discussed in Chapter 3, Solid and Hazardous Waste; in Chapter 4, Solid and Hazardous Waste; and in the Solid and Hazardous Waste Appendix. The CBM operator is responsible for any and all activities associated with their equipment and materials.

C-42: How many monitoring wells will be required per CBM well, who would review the monitoring, and what are the actions taken if monitoring indicates impacts?

R-42: The Project Plan will be the vehicle for requiring monitoring wells installation by the CBM operator. Also, water monitoring wells will be installed by the state and BLM within the Controlled Groundwater Area. The required number of monitoring wells per CBM well will depend on the monitoring wells in existence when the plan is submitted. If impacts such as drawdown of groundwater below acceptable levels are identified, actions such as slow down of gas retrieval or re-injection of produced water may be requested of the operator. Also, the operator may be required to install a new deeper water well for the affected individuals under the provisions of their Water Mitigation Agreements.

C-43: Alternative A states, "The Crow Reservation can expect few impacts from CBM development within Montana under this alternative." Any impacts that could cause natural springs and water wells to be dry holes are significant impacts. Why is no monitoring planned for the Crow Reservation? It is stated in Chapter 2 that monitoring wells will be required for BLM-administered oil and gas leases near reservation boundaries. There is no mention of necessary monitoring wells associated with other than BLM-administered leases.

R-43: Monitoring requirements are presented in Chapter 2, Alternative E—Preferred Alternative, and in Chapter 4, Hydrological Resources. Groundwater monitoring is required for any exploration wells drilled

on a BLM-administered oil and gas estate and any development wells drilled on a case-by-case basis. Regional monitoring requirements, beyond those required for the BLM-administered oil and gas estate, are discussed in the Monitoring Appendix.

C-44: Chapter 2 includes the requirement for groundwater monitoring if exploration wells are drilled within 2 miles of the reservation on a BLM-administered oil and gas estate. This language should be amended to apply only if a production or injection well is located within a 2-mile distance from the reservation.

R-44: The language in Chapter 2 is correct.

C-45: Will well spacing be completed to maintain underground aquifers for use by the surface owner or lessee?

R-45: The extraction of groundwater from coal seams is a necessary element for the production and development of CBM. Operators whose activities affect a landowner's water supply are required to enter into a water mitigation agreement with the landowner to provide an alternate source of water.

C-46: What agency(s) have authority over the regulation and permitting of CBM production and development? Tribal, Bureau of Indian Affairs, and EPA permitting requirements should be added to the EIS as they relate to tribal, allotted, and fee lands on and off the Crow Reservation.

R-46: Specific federal and state agency responsibilities with respect to CBM exploration and development are detailed in Chapter 1 of the FEIS. State and federal agency permitting responsibilities, including permit requirements on tribal lands, are set forth in Chapter 2.

C-47: Is BLM continuing to develop exploratory wells without NEPA authorization?

R-47: BLM has approved permits that authorize the drilling and testing of CBM wells on certain federal leases. An environmental analysis was completed and documented in accordance with NEPA before BLM approved these permits. BLM will continue to comply with NEPA before approving individual permits or project plans.

C-48: Methane is a volatile gas that has the potential to leak, seep, or migrate to existing water wells, core holes, and outcrops. The gas could potentially accumulate in buildings at volatile levels.

R-48: The potential for migration of methane would depend on site-specific conditions and will

vary greatly from one CBM development area to another. The migration of methane to domestic water wells is a potential impact that should be identified in the Project Plan with appropriate mitigation measures.

C-49: The EIS discusses the venting and flaring of gas for up to 6 months. Will the existing venting occurring from monitoring wells be eliminated or captured? Can some of this gas be captured for sale?

R-49: Both the MBOGC and BLM have rules and regulations covering requirements for the venting and flaring of gas from wells. CBM operators would be required to follow these existing rules and regulations. The venting of gas produces such a minor quantity that it is not economical to capture the gas for sale.

C-50: Please provide more information on what would happen when there are existing, but not producing, CBM leases and an operator is looking to develop or expand a coal mine in the same location. Consider the effect of the 1-mile buffer suggested under some alternatives and lack of such a buffer in other alternatives.

R-50: Potential conflicts between coal mining and CBM operations are discussed in Chapter 4, Geology and Minerals. The issue of CBM development conflicting with coal mining operations would be addressed on a case-by-case basis during the approval process of the CBM operators' Application for Permit to Drill. Lease stipulations for No Surface Occupancy would be one means of resolving potential conflicts. Resolution of conflicts would be further guided by BLM Instruction Memorandum WO-IM-2000-081 (BLM 2000c). The FEIS also encourages voluntary cooperative agreements between CBM and coal mine operators to resolve conflicts. Under Alternative E—Preferred Alternative, no buffer zones would be present around active coal mines.

C-51: The alternatives presented are not adequate to protect resources. The RFD that was used for this EIS allows for too much development and has unacceptable associated impacts. A new alternative or a lesser RFD should have been created to provide an acceptable outcome.

R-51: The RFD presented in the FEIS was developed using a combination of historical trends, present activity, government and industry estimates, and professional judgment. The RFD is based on known resources of coal and the potential standard gas volume per ton. Therefore, a lesser RFD is not possible.

The alternatives presented in the FEIS to address the RFD were developed under two scenarios: restricted development (Alternative A) and expanded development (Alternatives B, C, D, and E). These alternatives meet

the requirements of NEPA in evaluating potential development options and their impacts on area resources.

C-52: Land subsidence must be evaluated by the DEIS.

R-52: The drawdown of groundwater from CBM activities has been identified as the cause of surface subsidence in Wyoming (Case et. al. 2000). The subsidence was recorded as ½ inch and therefore does not represent an immediate impact to surface lands. In Montana where coal seams are thinner, subsidence would be less than what has been observed in Wyoming where coal seams are thicker.

C-53: The BLM DEIS inadequately confronts one of the most potentially disastrous issues related to CBM development: coal fires. The DEIS discusses the unlikely nature of coal fires increasing (or starting) by implying the completion of CBM wells create unfavorable conditions for the spontaneous combustion of coal. It also skirts the issue of expanding old or starting new coal fires along the edges of the basin (where dewatering exposes coal to air entry) by directing the reader to the unlikely event of coal fires starting because of CBM wells. This fails to adequately address the potential for more or new coal fires and inadequately covers air quality/coal fire concerns.

R-53: The Wyoming Geological Survey has published Coal Report CR 01-1, March 2001. The title is *Pyrophoricity (spontaneous combustion) of the Powder River Basin Coals—considerations for coal bed methane development*. This paper concludes, “During the production phase of CBM activity, conditions necessary to foster spontaneous combustion of coal are not present. After the coal seam is depleted of economic methane resources, wells must be plugged and sealed. Unlike abandoned mines, CBM wells leave no underground voids susceptible to further subsidence and associated spontaneous coal ignition.” Finally, oxygen is required for combustion. Many pipelines and gathering lines have oxygen sensors that will shut in sources of oxygen greater than approximately 10 parts per million. Until they can drill exploration wells, our numbers are reasonable estimates.

C-54: The EIS estimates that 10 to 25 wells will be drilled in Park County and 1 to 15 in Gallatin County. J. M. Huber Corporation, which has leased minerals across 18,000 acres in Park and Gallatin counties, has repeatedly stated in public meetings that if gas is found, the company has plans to drill up to 130 wells in the area.

R-54: The RFD is based on known coal resources and used the standard volume of gas per ton of coal to calculate the potential number of CBM wells per county. J.M. Huber has yet to identify if any gas exists in Gallatin County for basing their well projections. Until they can drill exploration wells, our numbers are speculative.

C-55: It should be required that wells be drilled from multiple wellhead sites where possible.

R-55: The Preferred Alternative requires that operators develop multiple coal seam from a single location unless they can demonstrate in their Project Plan why this would not be feasible for that site.

C-56: Impoundments must be lined and treated as hazardous materials: fenced, posted, and monitoring wells installed.

R-56: Impoundments will have to meet the BLM and MBOGC’s construction guidelines and monitoring requirements. Produced CBM water is not recognized as a hazardous material under the Toxic Substances Control Act nor as a pollutant under the Clean Water Act.

C-57: Adequate bonding for weeds might be one way to hold the companies more accountable.

R-57: BLM and the State have the authority and flexibility to determine the appropriate amount of bond coverage for oil and gas lease operations. Many factors are considered by the agency when determining the amount of bond coverage. Regulations usually guide or determine when and how an agency can use the bond.

Operators are responsible for the control of weeds that result from their lease operations. A weed management plan proposed by the operator must be submitted for approval by the permitting agency or the County Weed Board.

C-58: Injection wells should be required around private minerals like they are around Indian reservations.

R-58: Injection wells are not required around Indian reservations. They are, however, one of many possible mitigation measures that may be implemented if monitoring results indicate gas drainage is occurring. Private mineral owners can petition the MBOGC for protection of their minerals and for spacing changes if drainage is discovered on their assets.

C-59: CBM companies should be required to install hydrogen sulfide and methane monitors to anyone within an 18-mile radius with a water well.

R-59: This requirement was not incorporated into the Preferred Alternative because the data does not indicate

that migration of methane or hydrogen sulfide is likely to occur.

C-60: It will likely take hundreds of years for some of the damages brought about by the proposed manner of development to be healed.

R-60: The Preferred Alternative incorporates many mitigation measures to reduce natural resource impacts and strike a balance between CBM development and sustained resource management. Reclamation of unavoidable impacts will be accomplished when the wells have reached the end of their productive life and have been closed. Replenishment of coal seam waters will take time.

C-61: The surface area where access to drilling, pipelines, and all connected infrastructure will be occurring must be considered.

R-61: The disturbance of surface acreage and access to private, state, and federal lands for infrastructure construction and operations has been considered in the impact analyses for each resource topic. Surface owner agreements will be used to determine locations of facilities and to draft an understanding between surface owners and operators regarding access.

C-62: If CBM is allowed to develop without sufficient amounts of baseline data in all of these areas, it will be difficult—if not impossible—to identify the exact cause of future natural resources problems.

R-62: Sufficient data has been collected and considered for this level of planning and decisions will use an adaptive mitigation approach for considering any new data that might change operating procedures.

C-63: What methods of recharging the aquifer are being considered? Who is going to reimburse the surface owners if they have to drill deeper for new wells? Is a numeric standard being proposed that will allow irrigators to continue growing crops that are their economic mainstay? Who will monitor and enforce these standards?

R-63: The water being pumped for CBM extraction is derived from the coal seam. Aquifers are required to be monitored for drawdown. Monitoring will be carried out by the BLM, State, and the operators. If results of monitoring indicate that unacceptable levels of groundwater are being removed from usable aquifers, steps will be taken to reduce or recharge the aquifer in accordance with the Controlled Groundwater Area order requirements. See the Monitoring Appendix for more details.

Operators are required to enter into a Water Mitigation Agreement with all water users in the area that might be affected by their CBM development activities. These agreements typically require the operator to drill a new deeper well or replace the water through some other acceptable means. See the Hydrology Appendix for more details.

No numeric standards are proposed in the FEIS, as they are not part of the scope of the project. The MDEQ is tasked with developing numeric standards for the surface water bodies in Montana that protect current users. The monitoring and enforcement of standards is the responsibility of the MDEQ and the operators per their permit requirements.

C-64: CBM development might pollute the ozone layer.

R-64: The release of CBM into the atmosphere and the potential degradation of the ozone layer from these actions has been addressed in the Air Quality Analysis. See Chapter 4 in the Air Quality and Climate section.

C-65: Monitoring should be required if the edge of a field is within 5 miles of a reservation boundary. The same should be extended to all lands within 5 miles of the edge of an exploratory or productive field.

R-65: The BLM has a trust responsibility that requires it to protect the Indian trust assets of affected reservations. The BLM needs to monitor and determine if these assets are being affected. The BLM and State must also determine what effect their proposed actions would have on other owners. The permitting agencies do have a responsibility to mitigate impacts caused by approved operations. Monitoring of each development field for various concerns will be conducted as outlined in the Monitoring Appendix.

C-66: The EIS needs to consider bonding similar to coal development.

R-66: Bonding requirements for BLM and the State are established by regulations. It would require legislation to change the bonding requirements which is outside of the scope of the EIS. BLM and the State have the authority and flexibility to determine the appropriate amount of bond coverage for oil and gas lease operations. Many factors are considered by the agency when determining the amount of bond coverage. Regulations usually guide or determine when and how an agency can use the bond.

Hydrological Resources

Comments and Responses

Comment 1 (C-1): What efforts are being made by BLM, the State, and CBM producers to protect ranching operations, particularly water?

Response 1 (R-1): The Montana DNRC issued an order that describes the authorities that pertain to CBM development and groundwater: *Final Order: In the Matter of the Designation of the Powder River Basin Controlled Groundwater Area*. A copy of the order is included as Appendix E of the Water Resources Technical Report (ALL 2001b).

The order outlines water rights issues, mitigation, monitoring plans, and jurisdiction with respect to CBM water production and use. CBM operators will be required to have an agreement with the private surface owner. The agreement should address operations on private surface. Water Management Plans will also be required by the MBOGC and BLM before approval to drill can be obtained. If a surface discharge is requested, the CBM operator will be required to obtain an Montana Pollutant Discharge Elimination System (MPDES) permit, which will take into account all beneficial uses. In addition, the state and BLM are installing a regional monitoring system and will require CBM operators to perform in-field monitoring of groundwater levels.

C-2: Is CBM-produced water of sufficient quality for watering livestock?

R-2: The Hydrology section in Chapter 3 includes discussion of water quality. Waters with a total dissolved solids (TDS) of less than 3,000 milligrams per liter (mg/l) are generally considered to be acceptable for livestock use (Bauder 1999). Coal seam waters from the Powder River Basin rarely contain TDS values in excess of 2,500 mg/l. Therefore, it is expected that in most cases the CBM-produced water will be acceptable for livestock use.

C-3: How much CBM-produced water can the livestock industry use?

R-3: The total surface area of the CBM emphasis area is 25 million acres (all owners) (WRTR, ALL 2000). If we assume that 84 acres are needed per cow per year (7 acres per AUM, a high number since all surface will not be used for grazing), then a total of ~300,000 cows could be supported by this range. If each cow drinks on average 20 gallons of water per day (more in the summer, less in the winter), then the total volume of water that could be managed by cattle

would be 6 million gallons per day, or 4,167 gpm. The actual volume of water used by livestock will be dependent on a variety of factors, including location of livestock relative to CBM production, the number of and type of livestock, and water rights. In order to be approved the operators Water Management Plans must set out the disposal methods to be used, and/or the beneficial uses of the produced water. Such plans must be reasonable if they are to be approved.

C-4: How much additional land will be made available for livestock from CBM water and what impacts will this have on vegetation and wildlife?

R-4: This issue is discussed in the conclusions for Alternative C of the Livestock Grazing section of Chapter 4.

C-5: The EIS should address the infringement of water rights caused by depleting water wells and by degrading quality of stream water.

R-5: The EIS addresses issues related to loss of water rights in the Production section under Alternative B in the Hydrology section of Chapter 4. The discharge of CBM-produced water and the impacts on water quality are addressed in the discussions under Alternative C of the Hydrology section of Chapter 4.

C-6: The DEIS does not address monitoring of groundwater and surface water.

R-6: The Monitoring Appendix includes a discussion of the responsibilities for monitoring water resources.

C-7: Which governmental entity will protect the water supply?

R-7: The MDEQ is responsible for enforcing current water quality standards. Both the MDEQ and the MBOGC enforce the Water Mitigation Agreements required of every CBM operator.

C-8: What forms of water management will be required?

R-8: Under the Alternative E—Preferred Alternative, operators will be required to submit Water Management Plans (WMPs) which detail their proposed management. WMPs are discussed under Alternative E of the Hydrological Resources section in Chapter 4.

C-9: Will CBM water be fit for irrigation and for how long?

R-9: The extent to which CBM-produced water can be used without impacts on soil and crop production will vary based on site-specific conditions. The Soils section in Chapter 4 of the EIS discusses the impacts of CBM on crops and additional detail can be found in the Soils

CHAPTER 5

Hydrological Resources

Technical Report (ALL 2001a). The quality of CBM water is discussed in the Hydrology section of Chapter 4 and additional information can be found in the Water Resources Technical Report (ALL 2001b).

C-10: The DEIS offers no mitigation for the people dependent upon groundwater.

R-10: The DNRC order that established the Powder River Basin Controlled Groundwater Area discusses mitigation of impacts resulting from CBM development to groundwater resources. A copy of the order is included as Appendix E of the Water Resources Technical Report (ALL 2001b).

C-11: Some of the water resources in the area are not now suitable for irrigation.

R-11: Water quality conditions in some areas are currently unsuitable for irrigation. The water quality in the region is described in the Hydrological Resources section of Chapter 3.

C-12: The DEIS falsely claims that groundwater is used for irrigation.

R-12: The Water Resources Technical Report Exhibit 20 (ALL 2001b) and the Crow Indian Reservation report (Crow Tribe 2002) both provide information from the MBMG database on wells that are currently designated as having irrigation as their primary use. Based on this information, it is believed that some use of groundwater for irrigation occurs within the study area.

C-13: The DEIS presents no basis for determining the suitability of water for irrigation.

R-13: A discussion of the suitability of CBM water for irrigation is found in the Hydrological Resources section of Chapter 4 of the Final EIS.

C-14: Where in the DEIS are the mitigation impacts on sub-irrigation of hay-base on rivers and streams in southeastern Montana?

R-14: MDEQ is developing surface water standards to protect surface water quality for all downstream beneficial uses, including irrigated agriculture. Therefore, mitigation measures required to meet surface water quality standards will need to be sufficient to protect sub-irrigated hay base.

C-15: The DEIS does not address salinity or 22 other inorganic constituents in CBM water. What are the impacts of these constituents?

R-15: A complete water analysis will be required to be submitted with Water Management Plans, and with applications for MPDES discharge permits.

These will not be approved unless all standards are met. As standards are intended to protect all beneficial uses there should be no impact from these constituents. The water quality of CBM-produced water is discussed in the Hydrological Resources section of Chapter 3. Additional discussion is also available in the Water Resources Technical Report (ALL 2001b). Impacts are discussed in the Hydrological Resources section of Chapter 4.

C-16: The two DEIS use markedly different sodium absorption rate (SAR) values; existing available data should be used to develop representative SAR and electrical conductivity (EC) values for each watershed based on median stream flow rates.

R-16: The states of Montana and Wyoming have coordinated the assumptions used in the FEIS. Analytical methods were also coordinated to ensure parallel impact analyses in both parts of the Powder River Basin.

C-17: Where did baseline surface water SAR and EC values come from?

R-17: Baseline surface water quality data used in this analysis was obtained from USGS online sources, including the web site: http://waterdata.usgs.gov/mt/nwis/monthly?search_criteria=huc_cd&submitted_form=introduction. Specific references to data sources are included in the tables or in relevant text.

C-18: The EIS needs to include an explanation as to the relationship between EC and SAR, the impacts of EC and SAR on soils, vegetation, what the Hanson curve means, and what it means to be above the line or below the line.

R-18: Detailed information regarding the relationship between SAR and EC can be found in the Soils Technical Report (ALL 2001a) and the Water Resources Technical Report (ALL 2001b). This discussion has been added to the text of this document, and is contained in the SWQATR (Graystone and ALL, 2002). As before a discussion of this relationship is also included in the Soils Technical Report (ALL, 2001a) and the Water Resources Technical Report (ALL, 2001b). These technical reports are available on the MDEQ CBM web page at <http://www.deq.state.mt.us/coalbedmethane/index.asp>.

C-19: What is the effect of SAR on crops?

R-19: SAR does not directly impact plants. It affects soil quality and structure that does impact plant growth. EC has a more direct effect on plant growth. The effects of SAR and EC on crop production are discussed in the Soils Technical Report (ALL 2001a).

C-20: Water high in SAR will damage soils containing smectite; the DEIS does not address this.

R-20: The EIS discusses the impacts on soils from SAR in the Soils section of Chapter 4. Additional discussion can be found in the Soils Technical Report (ALL 2001a).

C-21: What is the optimum SAR value? Is a lower reading always better?

R-21: Generally, a lower SAR reading is better. There is no optimum SAR value. So long as the ratio of sodium to calcium and magnesium remains low clay structure should not be affected. If clay structure is maintained the ability of clay rich soils to infiltrate moisture will not be affected, and there is unlikely to be a decrease in crop yield. Additional discussion on this topic can be found in the Soils Technical Report (ALL, 2001a).

C-22: How much sodium is contained in CBM water? How much exists in the current surface waters?

R-22: The concentration of sodium and other constituents will vary in the CBM water produced across the Powder River Basin and in the coal seams outside the basin. The sodium load that surface waters carry varies over time as well. Average water quality for several coal seams and some surface waters are published in the Water Resources Technical Report (ALL 2001b).

C-23: Why does the DEIS not prevent discharge to protect those who live downstream?

R-23: The MDEQ is developing surface water standards to protect surface water uses for downstream users. It is the role of MDEQ to control discharges to surface water. Any discharge of CBM water to surface waters must meet water quality standards and discharge permits must protect beneficial uses for which the surface water may be used. The MDEQ is addressing the issue of CBM discharge through the TMDL process, and therefore, it is not a part of this EIS. Information on the TMDLs is provided in the Hydrology Appendix.

C-24: Discharge permits should be reviewed annually and penalties put in place.

R-24: Details regarding how MDEQ will enforce General Discharge Permits are included in the Hydrology Appendix.

C-25: The alternatives are not sufficiently protective of stream quality from impacts by discharge to streams and by infiltration. What is the fate of water in impoundments? Will there be monitoring wells?

R-25: The Alternative E—Preferred Alternative was designed to protect surface water quality by requiring that all discharges meet MPDES permitting requirements. The fate of water in impoundments will depend on the design and siting of the impoundments, as discussed in the Hydrological Resources section of Chapter 4. Infiltration impoundments would be constructed with the intention that infiltrated water would recharge bedrock aquifers, and not allow produced water to be discharged to surface drainages. Such impoundments will be monitored to ensure that this is water is actually taking place, as outlined in the Monitoring Appendix.

C-26: How will discharge and infiltration permits be enforced and penalties assessed?

R-26: Information on the General Discharge Permits can be found in the Hydrology Appendix of the EIS.

C-27: What are the overall impacts on the Tongue, Powder, Rosebud, Owyhee, and Yellowstone rivers.

R-27: The overall impacts on affected rivers and streams can be found in Chapter 4 under the Hydrological Resources section.

C-28: If an ephemeral stream becomes a perennial stream due to CBM-produced water discharge, is this considered an impact on the water quality of the stream?

R-28: The impacts on ephemeral streams were analyzed in the Hydrological Resources section of Chapter 4. Ephemeral streams that become perennial because of CBM-produced water discharge must meet all water quality standards.

C-29: The DEIS does not adequately address the potential for spills and leaks from water containment basins.

R-29: The impoundments would have to be designed to contain a 25-year storm event, and meet other federal and state design and construction requirements.

C-30: The DEIS methods to analyze impacts on Powder River Basin streams do not account for the effect of receiving water chemistry (e.g., ambient calcium concentrations, carbonate equilibria, mineral solubilities, etc.) on the blended water chemistry.

R-30: Agree, the EIS impact analysis was developed using a simple mixing model that did not account for chemical reactions. This approach was chosen as the exact reactions taking place are not known. The mixing model and the drawbacks of the model are discussed in the Surface Water Quality Analysis Technical Report.

C-31: If the water quality of a stream has already been exceeded by Wyoming CBM production, will Montana allow discharge of CBM-produced water? Even a slight decrease in Tongue River water quality will impair its utility to irrigators.

R-31: The State of Wyoming has stated no CBM-produced water will be discharged into the Tongue River in Wyoming. (Refer to the letter from State of Wyoming in the Hydrology Appendix). The two states have also discussed a distribution of the assimilative capacity between Montana and Wyoming. However, no decision has been made yet on this issue. For any given stream, once the assimilative capacity has been met, no further discharge will be allowed. Therefore, it is possible that all of a stream's assimilative capacity could be used up by Wyoming CBM producers, and no discharge could be allowed in Montana.

C-32: The 7Q10 flow rates should be used in the impact analyses in addition to annual average and low-flow mean and high-flow mean flows.

R-32: The surface water quality analysis has been modified such that impacts on surface water are now being analyzed for the 7Q10 flows and mean monthly flows, including low monthly and high monthly mean flows, at each USGS station being evaluated. These analyses are included in the Hydrology Resources section of Chapter 4 for the relevant alternatives, and are presented in detail in the SWQATR.

C-33: The DEIS does not provide an analysis of the amount of water infiltrating to shallow groundwater systems that will subsequently discharge to surface water bodies.

R-33: The amount of water that will infiltrate into shallow groundwater systems and eventually discharge will be dependent on site-specific conditions. This will be addressed in site-specific Water Management Plans and environmental assessments.

C-34: Baseline flow values listed in Table 4-7 of the DEIS may have already been impacted by CBM development in Wyoming. What about baseline flow values in Table 4-6 of the DEIS?

R-34: The impact analyses detailed in the Hydrological Resources section in Chapter 4 use historical surface water quality conditions to predicted impacts from Wyoming and Montana. Historical surface water quality data includes the bulk of the historical surface water data provided by the USGS was collected prior to the onset of CBM production in either Montana or Wyoming.

C-35: Explain how limiting CBM discharges to the irrigation season will protect the Tongue River, riparian vegetation, not result in flooding of streams from ice jams and flows as CBM freezes, impacts of such events on soils.

R-35: The limiting of CBM discharge to a specific time period would be a site-specific condition that would be included as part of a Water Management Plan. The MDEQ could write flow-based discharge permits that would tie discharge rates to flow conditions in the receiving stream. Flow-based permits would ensure that CBM discharges are diluted by sufficient quantities of stream water. These permits could only be granted after it was ensured that all beneficial uses were protected.

C-36: CBM operators should be required to re-inject produced water. The EIS alternatives should include deep injection and injection into non-productive coal seams. Does the EIS consider the Schneider re-injection plan, which is being used in other states such as New Mexico and Colorado?

R-36: The quality of the water produced with CBM makes it valuable for one or more beneficial uses. Neither BLM of the State want to waste this valuable resource by injecting into formations with water of a worse quality which would eliminate beneficial use of the water. Most of the water produced with CBM in the San Juan Basin of New Mexico and Colorado is of poor quality and not useable for beneficial uses without treatment. That produced water is injected into deep formations with water that is also not suitable for beneficial uses. Re-injection as described by Mr. Schneider is discussed in the Alternatives Considered But Not Analyzed in Detail section of Chapter 2 of the Final EIS.

C-37: The EIS should require remediation of the aquifer as a mitigation measure.

R-37: Aquifer restoration is included as one potential mitigation measure of CBM-produced water under Alternative E—Preferred Alternative, as detailed in Chapter 2.

C-38: The DEIS should discuss why re-injection would not work.

R-38: The EIS discusses why re-injection of water into actively producing coal seams will not work in Chapter 2 in the Alternatives Considered But Not Analyzed in Detail section.

C-39: The EIS should address injection into shallow aquifers and possible impacts.

R-39: The EIS does not exclude injection into shallow aquifers from the discussion of Alternative E (Preferred

Alternative) in the Hydrological Resources section of Chapter 4.

C-40: The EIS does not address the irretrievable loss of groundwater resources.

R-40: The Hydrological Resources section of Chapter 4 discusses impacts on groundwater resources including its irretrievable loss. The discussion of Alternative E (Preferred Alternative) places an emphasis on the beneficial use of produced water in an effort to minimize the loss of this resource.

C-41: Dilution of high-sodium, low-calcium water with other waters could increase the total supply of water available for fisheries and irrigation.

R-41: . Dilution of produced water with water supplied from other sources would result in an increase in available water. The discussion of Alternative E (Preferred Alternative) emphasizes the beneficial use of produced water activities such as dilution and supply to fisheries and irrigation, which could be considered beneficial uses.

C-42: What, realistically, is to be done with the high sodium water?

R-42: Water quality is one of the most important and limiting factors that determines viable management options or beneficial uses. When water quality, such as elevated sodium levels above protective standards, prevents the use of certain management options, then only other management options can be used.

C-43: Water not suitable for surface release is potentially not suitable for beneficial use.

R-43: Water quality is one of the most important and limiting factors that determines viable management options or beneficial uses. When quality prevents the use of certain management options, then only other management options can be used. The quality of the produced water may make it unsuitable for use in irrigation, but that same water could be used to water livestock or as a dust suppressant on roads.

C-44: The General Discharge Permit does not allow (or acknowledge) that water produced in coal bed natural gas development can be beneficially used for agriculture.

R-44: Under the proposed General Discharge Permit, livestock watering is considered a beneficial use, but irrigation of agricultural fields and rangelands is not. However, any water specifically suitable for irrigation use as determined by testing may be used

and is not prohibited. The Water Management Plan could include this option.

C-45: Who will determine what a beneficial use of produced water is, and if no one has filed a beneficial use for the water, what will be done with the production water?

R-45: . Beneficial use of produced water should be determined jointly by the permitting agency, surface owner and operator. Beneficial uses of produced water will be detailed in Water Management Plans on a site-specific basis. The disposal of all water not beneficially used is discussed the Hydrological Resources section of Chapter 4 under Alternative E—Preferred Alternative

C-46: There will be no adverse effect to beneficial uses because Montana law prohibits discharge if there will be adverse effects.

R-46: Montana's "non-degradation" law and water quality standards are designed to maintain or enhance water quality and protect existing beneficial uses of state waters. Applicable water quality standards must be met before a MPDES permit is approved and water management plans will not be approved by BLM, without the corresponding discharge permits.

C-47: There is no definition of a water management plan.

R-47: Water Management Plans are discussed in Chapter 2 and complete details concerning requirements can be found in the "BLM Miles City Field Office Coal Bed Methane APD and POD Guidance Document."

C-48: Beneficial use should be left to the discretion of the operator.

R-48: .Beneficial use of produced water should be determined jointly by the permitting agency, surface owner and operator. Beneficial uses of produced water will be detailed in Water Management Plans on a site-specific basis.

C-49: Reservoir quality sands are present in the area that may be able to take re-injected CBM water. Why haven't they been studied or evaluated?

R-49: Deep injection and shallow injection are discussed in the Hydrological Resources discussion in Chapter 4. The Montana Bureau of Mines and Geology is currently studying these options for feasibility.

C-50: Where will CBM water come from for dust suppression and if water is going to be taken from the river for dust suppression, how will that affect water rights?

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R-50: CBM produced water that could be used for dust suppression could be stored in tanks or impoundments to reduce or eliminate the need to take water from rivers. A water right is needed if water for dust suppression is to be taken from a stream or river.

C-51: Explain how large surface area of containment ponds emphasizes “beneficial use” of produced water from CBM wells.

R-51: Impoundments can provide a variety of beneficial uses including stock watering ponds, wildlife watering ponds, fishing ponds, and industrial use water. This is described in the General Discharge Permit on in the Hydrology Appendix.

C-52: Explain how infiltration of surface aquifers that degrade the quality of these aquifers emphasizes “beneficial use.”

R-52: Infiltration of water that would result in the degradation of the surficial aquifers to a level in which it could not be used would not be considered a beneficial use. The infiltration of water that is of sufficient quality that this water may be used would be considered a beneficial use. The introduction of CBM water to shallow aquifers may degrade or improve the groundwater quality. The site-specific chemistry of the CBM water and the shallow groundwater would need to be evaluated for each proposed CBM project to determine if infiltration could be considered a beneficial use.

C-53: The EIS does not make a clear distinction between the potential impacts associated with using river water which receives produced water discharges under MPDES permits and the beneficial use of produced water for “managed” irrigation.

R-53: The EIS does not address site-specific issues. The use of produced water for “managed” irrigation would be detailed in a Water Management Plan for a site-specific beneficial use.

C-54: Is re-injection a beneficial use?

R-54: The injection of water for aquifer recharge or aquifer storage and recovery could be considered a beneficial use if the aquifer into which the water is injected is of sufficient quality that the CBM water can later be removed and used. Any such practice would be derailed on a site-specific level in a Water Management Plan.

C-55: If any beneficial uses are allowed, will the developer be required to obtain a water right?

R-55: Developers would not be required to obtain beneficial uses. Landowners who intend to

beneficially use the water outside of the limits established by mitigation agreements and the General Discharge Permits beneficial uses may have to acquire water rights.

C-56: Will CBM-produced water that must be put to beneficial use under Montana law 85-2-521, have to meet the criteria that is in Montana law 85-2-311?

R-56: Yes. According to Montana Code Annotated 85-2-521, “Groundwater produced in association with a coal bed methane well must be managed in any of the following ways: (a) used as irrigation or stock water or for other beneficial uses in compliance with Title 85, chapter 2, part 3.”

C-57: Explain the Montana Water Use Act requirements for a beneficial use permit.

R-57: See **R-56**.

C-58: Where are the water quality standards?

R-58: The MDEQ is currently working to establish TMDLs. The Hydrology Appendix includes a discussion of the TMDL schedule for the CBM emphasis area in Montana. Chapter 2 also lists other relevant regulations that must be met, including various water quality standards. The Montana Board of Environmental Review is considering numerical standards for EC and SAR. The range of proposed standards is described in the Hydrological Resources section of Chapter 4.

C-59: Why not urge MDEQ to adopt numeric standards for assessing water quality, rather than narrative standards?

R-59: The MDEQ has asked the Board of Environmental Review to consider establishing numerical standards for EC and SAR. Formal rulemaking has been initiated.

C-60: What is the quality of produced water? Will it vary greatly from site to site or will it all be similar to CX Ranch?

R-60: It is expected that the quality of CBM-produced water will change across the Powder River Basin. Based on CBM water quality data from Wyoming, the CBM water from the rest of the basin is not expected to be significantly lower in quality than the water from CX Ranch. It may even be higher in quality. The quality of produced water is discussed under the Assumptions topic in the Hydrological Resources section of Chapter 4. The available data regarding the quality of produced water is discussed in more detail in the Water Resources Technical Report (ALL 2001b).

C-61: What methods of monitoring and enforcement will guarantee our irrigators will still be in business 5 years, 10 years, or 20 years down the road?

R-61: Water quality standards would be enforced either through permits or direct Water Quality Act enforcement. Methods of monitoring are discussed in the Monitoring Appendix.

C-62: How will the water quality and water supply of different targeted areas be assured?

R-62: The MDEQ has taken a no degradation approach to CBM development to protect water quality for all areas of development. Water supplies are assured through the designation of a Controlled Groundwater Area, as summarized in the Hydrology Appendix and presented in detail in Appendix E of the Water Resources Technical Report (ALL 2001b).

C-63: Why are there no standards based on the reduction of and the destruction of river plants, crops, aquatic life?

R-63: MDEQ is developing water quality standards for drainages of the Powder River Basin. These standards consider effects on plant life.

C-64: What is the definition of “no degradation”? Does this require that an infinitesimal impact can be extracted or measurement from monitoring data? How is the impact to be characterized?

R-64: “No degradation” as defined by MDEQ means no impacts that would prevent the beneficial use of surface waters. Where there are narrative standards, a calculation will determine non-degradation. Monitoring as described in the Monitoring Appendix will be used to characterize levels of impact.

C-65: What parameters (physical, biological, etc.) are to be used to specifically indicated impact from CBM operations?

R-65: The Monitoring Appendix includes a list of all parameters that would be monitored to evaluate impacts from CBM operations.

C-66: The DEIS should specify water quality parameters that will be monitored, who will conduct the sampling and monitoring, and what actions will be taken if constituents reach levels potentially harmful to fish and wildlife.

R-66: The Monitoring Appendix includes a list of all parameters that would be monitored to evaluate impacts and what information warrants a decision change.

C-67: Will the Montana law that provides the state citizens the right to a clean and healthful environment be upheld?

R-67: The activities associated with CBM development would be required to meet all existing laws as detailed in Chapter 2.

C-68: The EIS states in the conclusion for Alternative E that Alternative E will have the same impacts as Alternative C. Will the limits listed in the Hydrological Resources section of Chapter 4 also apply to Alternative E? In Chapter 4, Alternative C section, it refers to “High-quality watersheds.” Explain how high quality waters could be degraded to assimilate CBM discharges under the Montana Water Quality Act Nondegradation policy and Montana Constitution. In Chapter 4, Conclusion of Alternative A: will the agencies allow illegal flow increases in the rivers in violation of the nondegradation law?

R-68: High quality and low quality watersheds are defined in the Assumptions for the Hydrological Resources section in Chapter 2. The MDEQ is developing TMDLs to address the issue of degradation resulting from CBM discharge (see the Hydrology Appendix).

C-69: How is infiltrated water going to be measured and accounted for in setting standards for SAR in rivers and streams?

R-69: The infiltration of produced water and eventual discharge into surface streams would be a site-specific condition identified in the Water Management Plan and would require a discharge permit. The monitoring of impoundments is presented in the Monitoring Appendix.

C-70: In the Chapter 4 Hydrological Resources section under Assumptions, it states: “It is assumed that the sodium content ... is the target contaminant...” The water produced with the coal bed natural gas is not contaminated by the production process.

R-70: Agreed. See text changes in the Hydrological Resources section of Chapter 4.

C-71: How will the water quality of CBM-produced water change as it flows overland?

R-71: Based on preliminary studies by the BLM in Wyoming, it appears to be generally true that the EC of discharged CBM water will increase and the SAR will decrease as it flows over land. The changes to CBM-produced water as it flows over land would be site-specific and the analysis of this would be included in EAs for site-specific impacts on areas that include this as an option in the Water Management Plan.

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C-72: Where are the draft numeric standards being proposed by Montana and the Northern Cheyenne?

R-72: The draft numeric standards proposed by the State and the Northern Cheyenne Tribe are in the Hydrology Appendix.

C-73: Construction of CBM storage reservoirs on side channels of intermittent streams may interfere with normal flows of rainfall and snowmelt and create water rights issues.

R-73: Siting criteria for impoundments are described in the Hydrology Appendix under the General Discharge Permit discussion.

C-74: There will be enormous amounts of water demanding impossibly large or numerous storage facilities. What will happen to all this stored, unusable water over the years?

R-74: Discussion of the fate of impounded water is detailed in the Hydrological Resources section of Chapter 4.

C-75: How much of the stored water will reach streams?

R-75: See **R-69**. The amount of leakage that reaches streams will depend upon the site-specific stratigraphy. These impoundments will be designed and monitored to ensure that produced waters recharge aquifers rather than discharging to streams.

C-76: Who will monitor impoundments, and what will be monitored at them? If they are found to be leaking what will be done?

R-76: Monitoring requirements for impoundments are described in the Monitoring Appendix.

C-77: How will the sites of impoundments be reclaimed after some 20 years of use?

R-77: Reclamation requirements for impoundments are described in the Hydrology Appendix under the General Discharge Permit discussion and in Chapter 2.

C-78: Impoundments of water can be a livestock trap in the winter if of sufficient depth. In some cases, they would need to be fenced and a tank installed at the toe of the dike in order for livestock to drink safely.

R-78: The construction of impoundments in areas with active livestock grazing would be included in EAs to analyze site-specific impacts if this approach were selected as an option in the Water Management Plan.

C-79: Designation of a holding pond should be left to the discretion of the operator.

R-79: The construction of impoundments would be addressed in a Water Management Plan that should include a proposed process for reaching agreement with the surface owner regarding the location of the impoundment prior to construction. The design and placement of impoundments must also meet all necessary regulatory authority.

C-80: Will the holding ponds be required to be lined?

R-80: The construction and design of impoundments would depend on site-specific conditions that would be detailed in a Water Management Plan. The impoundments would be required to meet all necessary regulatory authority.

C-81: Evaporation will leave an even saltier body of water.

R-81: Agree. The evaporation of water from storage ponds would result in an increased TDS concentration in the water that remains in the pond. See the General Discharge Permit in the Hydrology Appendix for a description of actions when pond water is concentrated.

C-82: The Wyoming DEIS states these ponds act as flood control. How can it be flood control and not affect water righted water?

R-82: Impoundments covered by the Montana General Discharge Permit in the Hydrology Appendix would be restricted to off-drainage areas. These impoundments would not be built for flood control.

C-83: Will impoundments trap runoff water in violation of downstream water rights?

R-83: See **R-82**.

C-84: Site-specific surface and geological factors and water quality parameters need to be taken into consideration before infiltration-restrictive techniques are recommended.

R-84: Agree. Site-specific conditions would be specified in the Water Management plans that must be approved prior to constructing any impoundments. In addition, site-specific EAs would analyze the potential for impacts from infiltration, and restrictions could be placed to prevent these impacts prior to pond construction.

C-85: What criteria will be used for the construction of impoundments?

R-85: The size of impoundments would be dependent on site-specific data. The site-specific Water Management

Plans and EAs would provide all necessary data prior to construction of the impoundments.

C-86: “Water released to unlined surface impoundments has the opportunity to infiltrate into shallow aquifers, causing measured impacts on the depth to water in the alluvial aquifers and alluvial wells.” There is not any supporting data for this statement.

R-86: The extent of infiltration and the impacts on alluvial aquifers would be dependent on site-specific conditions. In areas where shallow alluvial aquifers exist and unlined impoundments are constructed above the aquifers, the potential exists for infiltration of water into the alluvial aquifers. See reworded text in Chapter 4 in the Hydrological Resources section.

C-87: In Wyoming, they are drilling holes in the bottom of the pond to shallow aquifers to allow the water to infiltrate. Would Montana ponds be used for this type of activity?

R-87: Drilling holes to facilitate infiltration would only occur as a site-specific condition. Prior to actual drilling, the activity would be analyzed in a site-specific EA and detailed in a site-specific Water Management Plan. This activity may also require additional permits, such as injection permits.

C-88: “Surface storage of produced waters would also require an MPDES permit issued by MDEQ.” This statement is misleading because authorization to discharge under a general permit is different than having to obtain an individual MPDES permit.

R-88: See revised text under Alternative E—Preferred Alternative section of Chapter 2.

C-89: What is the source of surface impoundment BMPs?

R-89: BMPs are developed from a variety of sources. Some are developed from regulatory and agency experience, others are developed from operator experience in other regions with CBM production.

C-90: Why is treatment of CBM-produced water not required for all alternatives that involve the discharge to surface waters?

R-90: Due to the variable nature of the produced water quality, treatment is not required for all the produced waters that may be disposed.

C-91: What method of treatment would be used to improve the quality of produced water prior to discharge. Is there a method of treatment that would reduce the SAR to acceptable levels?

R-91: Many treatment methods are available to treat high SAR waters. CBM producers will use the technology that best fits their needs.

C-92: There needs to be a discussion of the economic feasibility of water treatment.

R-92: The use of water treatment will be included in the Water Management Plans. If the quality of produced water is questionable, operators will need to evaluate the feasibility of using treatment to handle the water.

C-93: We have a well/spring and are concerned that the withdrawal of groundwater during the production of CBM may contaminate our well or dry up our well/spring. If our well/spring is impacted how will we be compensated? Who will pay for the mitigation?

R-93: Under both the DNRC Final Order Designation of the Powder River Basin-Controlled Groundwater Area and the MBOGC Board Order 99-99, each CBM operator must extend a water mitigation agreement to owners of water wells or natural springs within 0.5 mile of a proposed CBM field. The area will be automatically extended 0.5 mile beyond each impacted well or spring. The mitigation agreement must provide for prompt replacement of water affected by CBM development. The presence of mitigation agreements will be considered in the review of development applications by operators.

C-94: What information will be included in the Water Mitigation Agreements?

R-94: Water mitigation agreements will include area of proposed development, area under the mitigation agreement, locations of existing water wells and springs, possible sources of replacement water, and reasons for exclusion, such as mechanical and electrical problems.

C-95: What information/requirements will be included in the Water Management Plans and what agency is responsible for their approval?

R-95: The Water Management Plans will address site-specific conditions, as well as water management practices and their effects on soil, water, vegetation, wildlife, and groundwater depletion. Depending on the details of the Water Management Plan, the MDEQ, MBOGC, DNRC, BLM, or EPA would be responsible for its approval. Also see response to **C-47**.

C-96: If water basins are already over-appropriated, how can any new water rights or beneficial uses be justified?

R-96: The produced water will be allowed by statute and many of the beneficial uses can replace water allocated from surface water sources.

C-97: A stipulation is needed that prohibits CBM wells within some radius of inventoried groundwater resources.

R-97: Groundwater resources will be managed through the use of Water Management Plans, the requirements of the DNRC Final Order Designation of the Powder River Basin controlled Groundwater Area, and the MBOGC Board Order 99-99.

C-98: The DEIS does not address water discharge concerns or water table depletion specific to areas other than the Powder River Basin.

R-98: The Powder River Basin is expected to have the largest impact from CBM production. Impacts on the Powder River Basin can be extrapolated to other areas to determine the potential impacts from CBM production in those areas.

C-99: Why does the DEIS assume impacts on the Bozeman Pass and Hanging Woman areas; Stillwater, Big Horn, Gallatin, and Park counties; and Yellowstone River and Rosebud Creek would be the same as for the rest of the Powder River Basin?

R-99: Impacts from CBM activities will be similar because of the nature of the production activities, however the magnitude of these activities is expected to be substantially more in the Powder River Basin (PRB) than in other regions of the state. The RFD provides the production estimates used for this assessment. The Groundwater quality will also be chemically different from PRB groundwaters, but would still be handled through the use of a Water Management Plan.”.

C-100: The values presented in the Montana DEIS for SAR and EC of the CBM-produced water are significantly different than the values in the Wyoming DEIS.

R-100: The SAR and EC values used in the EIS were gathered from information from the CX Ranch and CBM production in Wyoming. These assumptions have been modified to reflect data from the Wyoming portion of the Powder River Basin. For a complete description of these assumptions, see the Assumptions section of the SWQATR.

C-101: What accounts for these differences? Are there differences in the water quality within the Powder River Basin between the two states?

R-101: Water quality within the Powder River Basin is highly variable, and the exact quality of the locally produced water is unknown until actual production wells are drilled and the water sampled.

C-102: The DEIS addresses drawdown up to 50 percent in some areas and production rates from the coal seam aquifers but does not include recharge rates. How long will it take for the aquifers to recharge and how are the confined coal seams recharged?

R-102: The 3D groundwater model prepared by the MBMG (Wheaton and Metesh, 2002) in conjunction with this EIS predicts that produced coal seams will recover at least 70% of their hydrostatic pressure within 5 to 12 years. Outside the field, productive coals should regain 90% of their pressure within 3-5 years. Nonproductive coal seams would recover 80% of their reservoir pressure within 5 years. The groundwater modeling conducted in conjunction with the current Wyoming CBM EIS also indicates that recovery of coal seams to within 20-30 feet of pre-production levels will require 3-4 years after the completion of production. The final recovery of the aquifers to pre-production levels will be a long-term process possibly requiring hundreds of years.

C-103: Restoration of the hydrologic balance is not addressed.

R-103: The recovery of the aquifers is discussed in Chapter 4 in the Hydrological Resources section.

C-104: What fraction of this rebound is actual recharge and what fraction merely represents an increase in the radius of the cone of depression? What process protects the existing groundwater users outside the immediate area of a field from this probable loss or reduction in their water resource?

R-104: Some of the recovery will be an enlarging of the cone of influence from production, but it is not expected to impact areas more than 14 miles away. The Water Management Plans required from CBM operators will address water production issues.

C-105: In a state where water rights are protected and water use permits are issued, how can the production of groundwater associated with CBM be allowed?

R-105: Exemption for CBM wells up to 35 gpm is established in the Final Order of the Montana DNRC, “In the Matter of the Designation of the Powder River Basin Controlled Groundwater Area.” This is included in Appendix E of the Water Resources Technical Report.

C-106: How can operators divert or impound water that is protected by water rights?

R-106: The current policy of the MDEQ, as demonstrated in the attached General Discharge Permit for CBM Produced Water (See Hydrology Appendix), is that “Impoundments constructed for the purposes of holding and storing produced water from CBM

development must not be located in ephemeral, intermittent, or perennial drainages...". As such surface impoundments will not divert or impound water that is protected by water right

C-107: The DEIS fails to identify that CBM wells in the State are not presently required to obtain a water right.

R-107: See **R-105**.

C-108: How will CBM production in Wyoming impact the waterways (Powder, Little Powder, and Tongue rivers) that cross into Montana?

R-108: Anticipated impacts to surface waters due to Wyoming CBM production are addressed in the Surface Water Quality Analysis Technical Report (SWQATR). This analysis is also summarized in Chapter 4 of this EIS. This surface water analysis was prepared in conjunction with Wyoming to ensure that the cumulative impacts of CBM production in both states were adequately addressed. Montana hopes to limit the impacts from Wyoming CBM production on Montana through a cooperative agreement between Wyoming and Montana.

C-109: Water quality in shared waterways needs to be monitored.

R-109: We agree with this statement. Please see the Monitoring Appendix Table, under Hydrology, Surface water quality and quantity for further details.

C-110: The DEIS includes a brief discussion of the interim agreement between the WY DEQ and MT DEQ. Will this agreement be renewed and will there be any changes to the agreement?

R-110: The final outcome of the cooperative agreement between Wyoming and Montana is outside the scope of the EIS. However, any Montana water quality standard that is approved by the US EPA would have Clean Water Act standing, and as such would need to be met at the border.

C-111: How will groundwater and surface water impacts from CBM production and discharge be monitored?

R-111: Impacts on surface water and groundwater will be monitored through the use of Water Management Plans and MPDES permit requirements. Specific monitoring requirements are addressed in the Monitoring Appendix.

C-112: Who will perform the monitoring, will the state and federal agencies do the monitoring, will it be operators?

R-112: Both operators and state and federal agencies depending on the location and type of CBM production activity will conduct impact monitoring.

C-113: Who will pay the costs associated with this monitoring? Will it be the developers and relevant agencies, or citizens?

R-113: The cost of monitoring will be the responsibility of the operator or agency, depending on the reasons for the monitoring activity.

C-114: What will happen if CBM companies are found to have leaking reservoirs, discharges, etc. that enter surface waters? Will they be fined? Will production stop?

R-114: The response by state and federal agencies to leaking reservoirs or discharges outside of permitted activities will be handled as allowed under the rules for the specific state or federal agency. See the General Discharge Permit for CBM Produced Water in the Hydrology Appendix, section III for current punishments for non-compliance with that permits.

C-115: The Montana Powder River Basin area is an arid climate which is currently experiencing a prolonged drought. Will the production of groundwater associated with CBM exacerbate this problem?

R-115: The production of groundwater from the coal seams may help the drought problem by providing a source for livestock water and irrigation water depending on the quality of the produced water.

C-116: Methane-producing coals contain gas only because they are separated from shallower coals.

R-116: Coal bed seams that produce methane contain a sufficient head of water to maintain pressure in the coal seam, causing methane to adhere to surfaces of the coal. Nonproductive coals do not have sufficient water pressure and methane has escaped to the atmosphere.

C-117: The DEIS states that the coal seam aquifers where CBM will be produced are confined in nature. What evidence supports this statement?

R-117: Coal seam aquifers are thoroughly discussed by the MBMG in its modeling report (Wheaton and Metesh 2002).

C-118: Are the aquifers hydrologically separated from the overlying aquifers?

R-118: The coal aquifers are generally hydrologically isolated from the aquifers above and below them. This is discussed in some detail in the MBMG 3D Groundwater Modeling Report prepared in conjunction with this EIS (Wheaton and Metesh, 2002). Coal seams appear to be

confined because their static water levels come to rest above their upper contact (i.e. they are artesian). Field data collected in association with the ongoing installation of CBM monitoring wells also supports the idea that the coal seams are isolated. In particular, despite bedrock being saturated within tens of feet of surface, static groundwater levels in the deeper coals are far beneath ground surface, yet above the top of the coal. Detailed quantitative analysis of vertical leakage (or vertical hydrologic conductivity, K_z) is planned to be conducted in conjunction with the hydrologic testing of the monitoring wells, which have been installed in nests (or clusters) so that water levels in the coal aquifer, and in the sand aquifers adjacent to them, can be monitored while water is pumped from the coal bed aquifer.

C-119: It is unrealistic to estimate the amount of water use over 20 years. Extremely high volumes are used in the first years of production—it tapers off after 5 to 10 years but the damage to the aquifers is already done.

R-119: We agree that water production is time-dependent. The highest production rates occur in the first months of production and then fall off. This relationship of production rate to time is discussed in the Water Resources Technical Report (ALL 2001b), and we have used it to predict possible discharge volumes and surface water impacts. Predicting impacts on groundwater requires knowledge of the total volume to be pumped, as well as the peak rates of withdrawal. The peak withdrawal rate is a function of rate of production per well and the number of completed wells. It is also important to remember that water levels in the coal seam aquifers will recover a large percentage of their drawdown within a few years after CBM production has ceased.

C-120: The 2.5 gallons per minute (gpm) average rate is an assumption and no firm data has yet been produced to substantiate this number.

R-120: The 2.5 gpm is a 20-year average production rate. This figure is based on a decline curve analysis of all CBM wells in Montana, as discussed in the Hydrology Resources section of Chapter 4. Initial rates of water production are expected to be much higher (approximately 15 gpm or more), while water production in the final years of production is expected to be near zero. For determining surface water impacts, the maximum total discharge rate is expected during year 6 at 6.2 gpm with 12,641 wells pumping at that time. Additional information about the calculation of production rate versus time is available in the Hydrology Resources section of Chapter 4, in the Hydrology Appendix, and in the

Water Resources Technical Report (ALL 2001b), and in the Surface Water Quality Analysis Technical Report (Graystone and ALL, 2002).

C-121: Why do the estimated rates of water production differ so much from the 12.5 gpm discharge in the Wyoming Powder River Basin EIS?

R-121: The Wyoming EIS used estimates from the early production life of the wells in the state and did not account for the reduction in production rate over time. Coordination Wyoming and Montana during the preparation of the Surface Water Quality Analysis Technical Report (Graystone and ALL, 2002) has resulted in Wyoming adjusting this value to 6.2 gpm for the time of maximum production, which matches the value used by Montana.

C-122: Why weren't water production rates from the test wells completed in Montana included in the EIS?

R-122: The water production rates from coal seam test wells were not included in the decline curve analysis because long-term production data was not available and a long-term decline could not be calculated.

C-123: In Chapter 4 of the DEIS, the Hydrological Resources section under Assumptions states that the CBM discharge rate is 2.5 gpm per well (single well, 20-year average). In the paper "Water Quality Technical Report" published December 18, 2001, by MDEQ, a graph on page 27 shows that the average CBM will discharge starting at about 15 gpm and take 10 years to reduce down to 2.5 gpm. Is it realistic to base your assumptions about water on this lower amount?

R-123: As long as the 2.5 gpm is kept in context as a 20-year average, it is reasonable to use this number. However it must be recognized that production rates for a single well will be much higher initially and will taper off to near zero in the final years of production.

C-124: EPA's calculated average well production rates are approximately double the values used in the Montana DEIS and range from 4 to 6 gpm/well, depending on the watershed. If a shorter well life span (10 years) and shorter development plan life span (20 years) are coupled with exponentially decreasing rates of production for individual wells initially discharging at 15 gpm, the following average production rates are obtained (Figure I, page 14, of the comments submitted by EPA). The 20-year cumulative average is lower (1.8 gpm/well as compared to 2.9 gpm/well), but the 10-year cumulative average is higher (3.2 gpm/well as opposed to 2.9 gpm/well). EPA recommends that a value of approximately 4 gpm/well should be used in the Tongue River watershed, 5 gpm/well in the Powder River

watersheds, and 6 gpm/well in the Little Powder River watersheds.

R-124: In response to the EPA analysis the states of Montana and Wyoming, in conjunction with the EPA, determined that the most accurate analysis of impacts would be achieved by basing surface water impact analyses on the maximum production rate that is predicted to occur for the Powder River Basin. This peak production is predicted to occur in year 6 of the RFD. During year 6 Montana and Wyoming wells are predicted to produce water at a total field average rate of 6.2 gpm. This value is now used in the analysis of impacts to surface waters.

C-125: How will the DEIS be in full compliance with the Clean Water Act and Montana Water Quality regulations, including not impacting beneficial uses and being in compliance with TMDLs? Will the discharge of poor quality, high sodium water be monitored or held to Montana's water quality standards? Does the State consider them to be discharges?

R-125: All discharges to a water body will be monitored under the MPDES permit system and will meet all requirements of the Montana Water Quality Act, and the Clean Water Act.

C-126: The DEIS states that large volumes of water will be removed from the [coal] aquifers in the basin and that recharge to aquifers could take as much as hundreds of years to recover. What are the long-term impacts of the withdrawal of water from the coal aquifers and how will it affect the regional hydrology?

R-126: The long-term impact on regional hydrology will be a reduction in the water table that will take years to recover. Local springs and some surface water flow will be reduced until complete recovery is obtained. Further discussion of these impacts is included in the Hydrological Resources section of Chapter 4.

C-127: What is the total volume of produced water from conventional oil and gas development? What is the average water quality and what percentage is treated? What percentage is discharged to surface water and what percentage is injected?

R-127: A small portion of produced water from conventional oil and gas production is discharged to the surface. Water produced from typical oil and gas production is considerably higher in TDS than water produced from CBM. Information on the volumes of produced water from conventional oil and gas can be obtained from the MBOGC.

C-128: The NPRC produced a document called "Doing It Right" which recommends development that includes aquifer recharge, clustered development, active enforcement of existing laws, including the Clean Water Act, multiple wells drilled directionally or horizontally from fewer, clustered pads and other best-available technologies to minimize and avoid impacts. Why was this not analyzed as an alternative?

R-128: This information was reviewed in preparing the DEIS and considered during the development of alternatives. The DEIS addresses the management of CBM development and cannot specify how CBM operators will develop specific fields. Each CBM field is different, and variations on completions and well spacing must be made to develop each field.

C-129: In Chapter 4, under the Preferred Alternative, it states a Water Management Plan must be developed explaining how an operator can discharge CBM water without degrading our surface water before discharge can occur. Has this been done? If not, it must be completed before the 90-day public comment is over.

R-129: This requirement is for each individual operator to complete once they have applied for a CBM development permit. These site-specific Water Management Plans will be prepared and submitted to the state and BLM for review prior to the issuance of drilling permits. These water plans are not part of this EIS.

C-130: There is a theory that the water at the bottom of an aquifer is of lesser quality than the water at the top of an aquifer when the aquifer is first tapped. If this is true, the water that will be left in the coal seams at the end of the 20-year life of proposed CBM wells may be poorer quality to a greater or lesser extent than the water that landowners are currently using. What kind of quality do you predict to remain in the leased areas after the CBM is gone? Will it relate to the chemical analysis and quality of the coal?

R-130: The final water quality of the coal seam aquifers is dependent on the formations through which the groundwater infiltrates to recharge the aquifer. At the end of production, the water quality could potentially be less than when production started, but this is highly dependent on the specific reservoir characteristics.

C-131: The Chapter 4 section on Impacts From Management Common to All Alternatives of the DEIS states that the drawdown level could extend up to 14 miles from the edge of production. If this is the case, why isn't the circle of influence for impacted water wells not at least 14 miles? Doesn't current Montana law require "replacement" water only a mile from CBM wells?

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R-131: The establishment of the Powder River Basin Controlled Groundwater Area requires that once a well or spring is impacted, mitigation agreements will be required to be offered an additional 0.5 miles out from the impacted well or spring. In this way mitigation agreements should stay ahead of impacts.

C-132: In Chapter 4, Assumptions Common to All Alternatives, in the section dealing with General Assumptions, the EIS states that approximately 8,000 gallons of water would be needed to drill each well. Will this water be obtained without water right?

R-132: How the CBM operator obtains the water for drilling is not within the scope of the EIS.

C-133: Can produced water from nearby CBM wells be used beneficially to drill additional CBM wells?

R-133: Yes. CBM water can be used to beneficially drill additional CBM and conventional oil and gas wells.

C-134: Will the FEIS specify that the Tongue River drainage cannot be used for drilling water? Do the other rivers also have the same designation as the Tongue River?

R-134: The EIS does not specify the water rights for any rivers. The control of water rights is not within the scope of the EIS.

C-135: Why are discharge permits still being issued? Why aren't SAR and bicarbonate levels being monitored?

R-135: Currently no new discharge permits are being issued for CBM development because of the current moratorium on development. The MPDES program will be responsible for issuance and monitoring of discharges from future development. The existing discharge to the Tongue River is being monitored according to the requirements of the MPDES permit. In addition, the USGS continues to monitor water quality at its established stations. Parameters such as bicarbonate and SAR are routinely measured and published as part of its monitoring program.

C-136: Will the Tongue River Reservoir act as a settling pond for the minerals and salts in the produced water and will this water be the first water to be discharged for irrigation? What effect will this have on the Tongue River Reservoir after 20 years of CBM development?

R-136: Use of the Tongue River Reservoir will not be altered by CBM development. The actual flow of the river may be increased due to permitted discharges. The chemistry of the water leaving the reservoir will reflect the long-term chemistry of the water entering the reservoir. Therefore, as long as the water flowing into the reservoir meets the beneficial use criteria, the water flowing out also will meet the criteria. The density of CBM water is not sufficiently different from the existing water to cause it to stratify. Therefore, complete mixing of all waters flowing into the reservoir should occur.

C-137: What will happen when water sources are no longer available for stock water or other beneficial uses because the groundwater is depleted? How will these beneficial uses be protected in the future?

R-137: Water Management Plans and Water Mitigation Agreements will detail, on a site-specific basis, the responsibilities of operators once production ends.

C-138: There is a passing reference to chloride and barium in Chapter 4, Impacts from Management Specific to Each Alternative for Alternative A, in the Conclusion that states, "Water quality parameters other than SAR would be impacted similarly to SAR, including chloride and barium, which can also result in both direct and indirect environmental impacts." What does that mean? What about magnesium? Can we expect increased levels of magnesium sulfate in livestock water as a result of CBM water? What effect will this have on livestock drinking the CBM water? What about selenium? What about the concentration of selenium in plants of the *Astragalus* genus?

R-138: Water quality impacts will be determined by the composition of produced water. Individual constituents such as magnesium and barium could be an issue depending on the analysis of produced water. Discharge of produced water will be limited by the MPDES program to minimize the impact on surface water bodies. Under the MPDES permit system all beneficial uses will be protected. Livestock and plant information is contained in other sections of the FEIS.

C-139: What about the sulfate ion interfering with the take up and utilization of copper in cattle? Will livestock producers be required to resort to copper injections due to increased levels of sulfate in the water?

R-139: See **R-138**. Water discharge will be in accordance with MPDES permits, which will be written with regard to site-specific water quality and beneficial uses.

C-140: I am interested in the final EIS presenting the aquifer depths that are showing quicker than expected depletion.

R-140: CBM production characteristics in other U.S. basins is beyond the scope of this EIS.

C-141: Was this depletion similarly experienced in the San Juan, Green River and other areas that have had CBM exploitation in the past?

R-141: CBM production characteristics in other U.S. basins is beyond the scope of this EIS, however the pumping of groundwater is fundamentally required to release the CBM from the coal surfaces.

C-142: In the Chapter 4 Hydrological Resources section under Assumptions, the assumption is that the quality of CBM-produced groundwater throughout the planning area is the same as the quality of CBM-produced groundwater at the CX Ranch field. The EIS does not justify this assumption.

R-142: This assumption has been changed for the FEIS. As shown in the Hydrological Resources section of Chapter 4, CBM water quality data from both Montana and Wyoming are used to provide a reasonable range of possible CBM water qualities for different portions of the Powder River Basin.

C-143: Table 3-3 (DEIS Chapter 3): The average base flow is given. When was the data taken and how many years were the average based on?

R-143: The data was obtained from the USGS and the calculations were conducted by the USGS in its report.

C-144: In Chapter 3 Private Landowner Revenue section under Water Resource Values: The EIS states that most of the water in the planning area originates as groundwater. This is not true. The majority of the Tongue River Water originates from rainfall and snowmelt.

R-144: We agree, volumetrically the majority of surface water in the Powder River Basin is derived from precipitation and snowmelt.

C-145: Agencies make the assumption that operators will need one impoundment for every 20 wells with each impoundment 5-6 acres in size. No data, information, or rationale is given to support this assumption.

R-145: As stated in Chapter 4 under Assumptions Common to All Alternatives, the values were determined from a variety of sources, including previous CBM EIS documents and discussions with BLM, state, and CBM operation personnel.

C-146: Why does the EIS not discuss the use of more current technology to reduce impacts on water depletion?

R-146: CBM operators are using the latest technology available to reduce the amount of water pumping required for methane production in an effort to reduce the cost of pumping water to the surface.

C-147: How are CBM wells constructed so that the withdrawal of water from overlying aquifers does not occur?

R-147: CBM wells are constructed with cemented casing set at the top of the coal formation. The cement provides a seal to minimize the production of water from upper aquifers.

C-148: Where are the baseline studies and inventories for groundwater aquifers, springs, seeps, including inventories of abandoned oil, gas, and water wells, Yellowstone River water quality and quantity, and other watersheds, wildlife, and vegetation? Will these studies be completed by the time of the FEIS?

R-148: Baseline information, studies, and water quality information are included in the EIS. This information was gleaned from existing information available from public sources. Additional studies are planned. However, under NEPA, an EIS must be prepared using "best available data."

C-149: The EIS should include studies of the hydrogeologic characteristics of the aquifers that overlie the coal seam aquifers.

R-149: The EIS is a statewide document and is not intended to study the impacts on each individual aquifer. CBM operators will be required to discuss impacts on aquifers within their Water Management Plans.

C-150: Will groundwater under tribal lands be subject to remediation agreements?

R-150: Water mitigation agreements as described in Chapter 6 of the Water Resources Technical Report also cover tribal lands.

C-151: CBM development should not be allowed on the reservations.

R-151: The development of CBM on tribal mineral rights is outside the scope of this document.

C-152: Chapter 4 Geology and Minerals for Alternative E in section for the Crow Reservation: Expand upon "hydrologic barrier."

R-152: The exact engineering of the hydrologic barrier will depend on the operator for localized specifications.

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It will consist of producing wells and injection wells to manipulate water movement within the coal seam.

C-153: The EIS states that the Northern Cheyenne hold a water right in the Tongue River and that it is marketable and sensitive to water quality changes; the same is true for the Tribe's holdings in the Big Horn River and this is not mentioned.

R-153: The Northern Cheyenne-Montana Compact establishes a water right for the tribe that covers water from the Tongue and Bighorn rivers and Rosebud Creek. See amended wording in Chapter 3 under the Native Americans section.

C-154: The Northern Cheyenne Water Compact with the State and the Federal government discusses groundwater drainage under the reservation. Will the aspects of this compact be analyzed in this EIS?

R-154: See changes to text in Chapter 4.

C-155: In the Chapter 4 Hydrological Resources section for Impacts from Management Specific to Each Alternative for Alternative A in the Crow Reservation subsection, it states: "The Crow Reservation can expect few impacts from CBM development within Montana under this alternative." Yet three sentences later admits that 14-mile drawdowns "could impact water wells and springs on tribal lands." The next paragraph states, "CBM development in Montana and Wyoming could drain groundwater and methane from coal seams under the reservation."

R-155: Under Alternative A, only current CBM development at CX Ranch will be allowed. This development is geographically distant from water wells on the reservation and impacts are likely to be slight. Under this same Alternative, Wyoming CBM development will continue to grow. This level of development could impact reservation water wells.

C-156: The EIS and Water Resources Technical Report reference a 2-dimensional and 3-dimensional model of CBM impacts on groundwater resources. Where is the information regarding these models and where are the results? Were these models used to quantify aquifer recharge and recovery rates?

R-156: See text in the Hydrological Resources section of Chapter 4 that includes a discussion of modeling. The complete reports are available directly from MBMG, either through their web site at <http://www.mbmgt.mtech.edu> or via telephone at (406) 496-4167.

C-157: The production of CBM in proximity to coal mines severely limits the coal mining regulatory

authority's ability to determine how coal mining is affecting the hydrologic resources.

R-157: CBM production near existing or new coal mines may affect the groundwater elevation in the mine and will limit the determination the coal mine's effect on water resources.

C-158: How will the CBM affects be monitored so that they can be differentiated from coal mining effects?

R-158: The CBM operator will need to address the impact on water resources in the Water Management Plan.

C-159: Does the EIS address the cumulative affects to drawdown resulting from CBM production and coal mining?

R-159: The EIS addresses the cumulative impacts from all activities in the discussion for each alternative in Chapter 4.

C-160: The EIS does not adequately address the impact of freezing temperatures on infiltration basins or direct discharge (land spreading).

R-160: Freezing temperatures will limit the volume of water discharged. Individual operators will need to manage changes from weather.

C-161: What are the environmental consequences of prolonged freezing and frost depth and how will freezing affect water quality?

R-161: The freezing of CBM water is not expected to alter its overall chemistry. Therefore prolonged freezing is not anticipated to cause any environmental impacts. Frost depth may alter water infiltration rates in water spreading operations, which would reduce the volume of water that could be managed by such an operation during winter months. These effects would need to be addressed in site specific Water Management Plans.

C-162: What impacts will North Dakota experience?

R-162: Effects of CBM development in Montana on North Dakota are expected to be quite slight. The surface water quality of the Yellowstone River, which flows into North Dakota, would be slightly altered as outlined in the Hydrological Resources section of Chapter 4. The resultant water quality at the Sidney, MT USGS station on the Yellowstone is expected to be quite similar to the water quality that would flow into North Dakota. All discharges to state waters, and the state waters themselves, will be monitored through the MPDES permitting program to ensure that beneficial uses are not impacted.

C-163: The EIS does not address subsidence. Will the removal of groundwater from the coal seams result in ground subsidence?

R-163: Ground subsidence resulting from groundwater removal should not be an issue in the areas of CBM production because of the thick layers of sedimentary rock located above the zones of potential production.

C-164: In Chapter 2 under the section Management Actions Specific to Each Alternative, Alternative A, it states, “Discharges from CX field would be to Tongue River through MPDES permit.” What about discharges to impoundments? What about use of water at coal mines?

R-164: The options for water management under Alternative A are presented in Chapter 2.

C-165: In Chapter 4 under the Impacts from Management Specific to Each Alternative, Alternative A, it states, “CBM activities would not result in additional impacts on surface water or groundwater.” Identify existing impacts.

R-165: Existing conditions are described in Chapter 3.

C-166: Chapter 4 under the Aquatic Resources section states, “Management features contained in Alternative E, including the overall Project Plan and Water Management Plan, would mitigate or minimize numerous potential impacts on aquatic resources including special status species, that otherwise might result from CBM development.” Explain how these plans will mitigate impacts.

R-166: Project Plans and Water Management Plans will detail the operator’s plan to develop and manage produced water, and will include BMPs. The regulatory agencies would have site-specific plans for managing produced water and determining monitoring and permitting requirements.

C-167: Will the agencies provide an alternative that has no effect on irrigation and groundwater resources?

R-167: See the discussion of Alternative E (Preferred Alternative) in Chapter 4.

C-168: In Chapter 2 under Management Actions Specific to Each Alternative, Alternative C, it states, “The operator must obtain 401 Certification from the state if the disposal action needs BLM approval.” This statement does not accurately reflect the requirements of the Clean Water Act Section 401 which requires the approval of any federal license or

permit to obtain state certification including the BLM approval of an Application for Permit to Drill.

R-168: 401 Certification for federal actions that could result in a discharge to state waters will be required, even if the State issues a MPDES permit.

C-169: In the Chapter 4 Wildlife section under BLM, USFS, and Montana Species of Concern, it states, “As previously discussed, pumping at CBM wells during development and operation may also alter near surface hydrology by dewatering local aquifers or lowering shallow groundwater levels.” Please reconcile this statement with statements in the Hydrological Resources section that dewatering activities will not impact shallow aquifers because of the presence of confining layers?

R-169: See changes to text in Chapter 4.

C-170: The Hydrological Resources section in Chapter 4 does not seem to contain mitigation components.

R-170: See text changes for mitigation measures in Hydrological Resources.

C-171: In Chapter 4, Hydrological Resources under Assumptions, in the second bullet, what is the definition of “short term”?

R-171: “Short term” refers to the initial higher water production rate of a CBM well. This higher rate duration is variable depending on site-specific conditions and on average production rates that decline sharply in the early years.

C-172: In the Chapter 4 Hydrological Resources section under Assumptions, it states that the 70 percent conveyance loss anticipated in the EIS would be applicable only if the waters travel at least 14 miles before joining a major drainageway. Clearly, water from CBM wells is likely to reach major regional rivers.

R-172: This value has been re-estimated at 20 percent for in-stream losses.

C-173: Map 3-4 of the DEIS is the Bedrock Aquifer map, but it is described here as the “portion of the planning area with the greatest potential for CBM development.” Which is Map 3-4?

R-173: See changes in text in Chapter 3.

C-174: In the Chapter 4 Hydrological Resources section for Alternative B under Production, it states, “Surface water and springs should not be impacted directly from groundwater withdrawal due to the depth and confined nature of the individual coal seam aquifers” is misleading. Regional drawdown will be observed at the margins of the coal seam aquifers, which can impact spring flow and groundwater discharge to streams. This

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is why Technical Advisory Committee has proposed concentrated water-level monitoring at the coal seam outcrops (Monitoring Appendix).

R-174: The regional drawdown on the margins of coal seam aquifers would not be a direct impact from CBM development. This drawdown would result as the confined aquifers attempt to reach a new equilibrium. This drawdown will be monitored as detailed in the Monitoring Appendix.

C-175: Table 4-19 Hydrological Resources (DEIS): Under Alternative E, the last bullet reads “see also Mitigation subsections described under Hydrological Resources in Chapter 4.” However, mitigation is not a subheading in this section.

R-175: See changes to text in Chapter 4.

C-176: In the Introduction to the Monitoring Appendix: “Adverse impact” to a “key resource” is observed, then, “... if it can be corrected by a management action within the scope of this plan, the change will be implemented.” This needs to be better spelled out. “If the adverse impact,” the EIS continues, “can be corrected only by a management action that is outside the scope of this plan ... the management change will be a formal amendment.”

R-176: An impoundment may considerably affect local surface water by increasing EC due to infiltration of produced water. In that situation, the normal scope of the plan might call for increased rate of monitoring and reporting. Management actions beyond the scope of the plan might entail a formal amendment to require the operator to install extraction wells for modifying infiltration and protecting groundwater resources.

C-177: In the Monitoring Appendix under Indian Trust for Information Warranting a Decision Change: Please clarify the amount of drawdown in the statement “for drawdown measured beyond 2 miles.

R-177: Drawdown will be determined on a site-specific basis.

C-178: If allowed to run on the ground, were the effects of direct discharge to the ground taken into account when assessing the impacts?

R-178: The impacts of discharge to land surfaces were addressed in the Hydrological Resources section of Chapter 4.

C-179: Evidently, contaminated water moving through the soil moves in a “plume” fashion as all liquids do and there is little or no mixing. With that seepage, how long will it take for water to surface

and what will the quality be at that point? Who would be responsible if the quality of that water causes problems downstream?

R-179: The mixing and dispersion of CBM-produced water that infiltrates into soils would be dependent on site-specific conditions. Infiltrated waters that seep from impoundments would be monitored as described in the Monitoring Appendix.

C-180: In the Chapter 1 section on Agency Responsibilities for the BLM concerning reservoir engineering/economic analysis, if this mapping can be done to protect hydrocarbons, why is it not required to verify and predict reservoir behavior, thereby helping to establish the best water management alternative?

R-180: This type of analysis was used for the EIS. Reservoir analysis includes drainage and production of water because it is so closely tied to CBM production. However, currently no production data is available for CBM in Montana outside of the CX Ranch field.

C-181: In the Chapter 3 Hydrological Resources introduction section, domestic uses should be added to the use of coal aquifer water in rural areas.

R-181: See changes to text in the Hydrological Resources section of Chapter 3.

C-182: In the Chapter 3 Hydrological Resources section under Surface Water in the DEIS, the Map 3-4 reference should be corrected to reflect Map 4-3, “Predicted Number of CBM Wells by Watershed for Expanded Development Scenarios Regardless of Ownership.”

R-182: See changes to text in the Hydrological Resources section of Chapter 3.

C-183: In the Chapter 3 Hydrological Resources section under Groundwater, the DEIS does not identify that the 1,500 and the 2,800 are TDS. This parenthetical statement should include TDS.

R-183: See changes to text in the Hydrological Resources section of Chapter 3.

C-184: In the Chapter 4 Environmental Justice section under Impacts From Management Specific to Each Alternative for Alternative B—Groundwater Drawdown: The 21 percent appears high based on data obtained from Wyoming.

R-184: See changes to text in the Hydrological Resources section of Chapter 4.

C-185: In the Chapter 4 Environmental Justice section under Impacts From Management Specific to Each Alternative for Alternative E—Northern Cheyenne, it states, “...similar to impact projected under Alternative

E.” This text is unclear. Should it say “...similar to impacts projected for the region under Alternative E”?

R-185: See changes to text in the Hydrological Resources section of Chapter 4. Low monthly mean stream flows are now used in both EISs, and 7Q10 low flows are also analyzed in the Surface Water Quality Analysis Technical Report.

C-186: In the Chapter 4 Geology and Minerals section under Impacts From Management Specific to Each Alternative for Alternative A, it states: “Removal of groundwater by CBM wells in coal seams that are being mined by Decker and Spring Creek could reduce the amount of groundwater flowing into the mineral areas.” This statement needs to be amended to reflect that Spring Creek is a dry mine.

R-186: See changes to text in the Hydrological Resources section of Chapter 4.

C-187: In the Chapter 4 Lands and Realty section for Alternative E, under Preferred Alternative Impacts and Mitigation—Conclusion: If there is no project plan required, would the water management plan also not be required?

R-187: Under Alternative E—Preferred Alternative, Project Plans and Water Management Plans would be required for all development.

C-188: The Montana Draft EIS uses the low monthly mean stream flow. The Wyoming Draft EIS uses the annual mean stream flow.

R-188: Further coordination between Montana and Wyoming has resulted in consistent analyses of impacts on surface waters. See the Hydrological Resources section of Chapter 4. Low monthly mean stream flows are now used in both EISs, and 7Q10 low flows are also analyzed in the Surface Water Quality Analysis Technical Report.

C-189: In the Chapter 3 Hydrological Resources section, Table 3-3 (DEIS), the Gallatin River basin and the upper Yellowstone River are not mentioned. Either exclude this area or include it in the EIS.

R-189: Production data for assessing impacts is limited. This data would be acquired on a site-specific basis and included in the project-specific EAs and Water Management Plans.

C-190: In the Chapter 4 Geology and Minerals section, the Conclusion of Alternative E is that produced water could be handled in one of several ways including injection, or injection could be

eliminated. With either of these conclusions in Gallatin or Park County, the mitigation relating to the same issues in my immediately preceding paragraph would be enormous—where is the mitigation?

R-190: Mitigation of produced water is discussed in the Hydrological Resources section of Chapter 4.

C-191: In the Chapter 4 Hydrological Resources section under Assumptions, it states: “For Alternative C, all CBM production water is discharged continuously and there is no storage or treatment.” This entire paragraph jumps from assumptions common to all alternatives to Alternative C. Alternative C allows for water to be discharged into off- and on-channel impoundment. How is this not storage of produced water?

R-191: See changes to text in the Hydrological Resources section of Chapter 4.

C-192: In the Chapter 4 Aquatic Resources section under Assumptions, it states, “The only management objective that applies to BLM lands and land subject to state regulations is the required placement of untreated waters from exploration activities in holding pits, tanks, or reservoirs, with no discharge to waters of the United States allowed applies to BLM and state lands.” What does this sentence mean?

R-192: See changes to text in the Aquatic Resources section of Chapter 4.

C-193: In the Chapter 4 Hydrological Resources section, Impacts from Management Specific to Each Alternative—Alternative A, Conclusion, what about the Tongue River?

R-193: See changes to text in the Hydrological Resources section of Chapter 4.

C-194: In the Chapter 4 Hydrological Resources section, Impacts from Management Specific to Each Alternative—Alternative A, Conclusion, the Little Powder River would have a SAR of 47?

R-194: Depending on how Wyoming manages its CBM discharge, the resultant SAR in the Little Powder River could range from 6 to 9 during base flow periods. However, during dry periods of extremely low flow, the SAR value would be equal to the CBM discharge SAR value. This is because the majority of water supplied would result from operations.

C-195: In the Chapter 4 Environmental Justice section for Alternative C under Surface Water Quality: What does trickle-down effects mean?

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R-195: See changes to text in the Environmental Justice subsection under the Socioeconomics section of Chapter 4.

C-196: In Chapter 2, Management Actions Specific to Each Alternative—Alternative C: Define what is meant by “industrial needs” and “agricultural reuse.”

R-196: See changes to text under Alternative C in Chapter 2.

C-197: In Table 3-4 of the DEIS: Define the irrigation season.

R-197: Irrigation season in Montana is generally from late March through September, depending on the crop. This definition has been added as a second footnote to the table in Chapter 3 of the FEIS.

C-198: In the Chapter 4 Hydrological Resources section under Assumptions, it states, “EC and SAR Limits: based on no reduction in infiltration EC-SAR relationship future limited by suggested MTDEQ thresholds (high level): SAR < 12 for Powder River, Little Powder River and Mizpah Rivers, SAR < 2 or 12 for all other streams.” This paragraph is unreadable.

R-198: See changes to text in the Hydrological Resources section of Chapter 4.

C-199: In the Chapter 4 Aquatic Resources section under Conclusion for Alternative A, it states, “Wyoming EISs and EAs found no decrease in surface water because of aquitards between production coals and surface waters.” Please reconcile this statement with conclusions in the Wyoming DEIS that dewatering activities would lower water levels in the overlying Wasatch formation aquifers and alluvial aquifers.

R-199: See changes to text in Chapter 4.

C-200: It is my understanding that selenium is a concern in some of the CBM water impoundments in Wyoming. Is that being evaluated in Montana? Can concentrations of iron be expected to rise in impoundments over time? Iron acts as an antagonist to copper absorption in cattle. Are there any constituents in CBM water that, as evaporation occurs, would affect cattle production or health?

R-200: The use of impoundments will be regulated by MDEQ and MBOGC and would require water quality sampling and monitoring. Potential problem constituents, such as selenium and iron, will be monitored through these permit processes.

C-201: In the Chapter 2 Management Actions Specific to Each Alternative section under Alternative E, it states, “No discharge of produced water unless the operator has appropriate MPDES permits and can demonstrate in the Water Management Plan how discharge could occur without damaging the watershed.” Table 2-2 in Chapter 2 of the DEIS states, “No degradation of the watershed would be allowed.” The standard of “no damage” or “no degradation” is impossible to enforce as the definition of “damage” has not been defined in the DEIS. The DEIS does not provide an assessment of Alternative E in light of Numeric Water Quality Standards currently proposed or under review. The Preferred Alternative must be enforceable and place regulatory standards, as are done in the permitting process through MPDES.

The wording and standards set forth under Alternative E are not sufficient to provide regulatory oversight of CBM development and are not compared to those regulatory standards in place or proposed. Therefore, the choice of Alternative E as the preferred alternative is unjustified, because it is not assessed in light of water quality standards.

R-201: Alternative E (Preferred Alternative) stresses the use of Water Management Plans and MPDES permits. Water quality standards will be incorporated in each plan as it is developed. Those requirements will then become part of the permitting process as allowed under Montana law. In the Hydrological Resources section of Chapter 4, we have used a range of proposed limits for surface water quality.

C-202: In the Chapter 4 Hydrological Resources section under Assumptions, it states, “It is assumed that the sodium content ... is the target contaminant ...” The water produced with the coal bed natural gas is not contaminated by the production process. The water produced in the coal bed natural gas extraction process is the same as if a rancher in the vicinity were producing water for his livestock from the same coals. Coal bed natural gas production does not contaminants to the water. Therefore, “target contaminant” should be changed to “target constituent” or “target parameter.”

R-202: We agree with this recommendation. The text now identifies sodium as a target constituent. In discussing the concerns for sodium and SAR, the term “concentration” is used.

C-203: Table 3-9 of the DEIS provides some analyses of regional groundwater quality; however, these data are for general characteristics, rather than specific analyses for some potentially toxic elements that are likely to be found in CBM well waters (e.g., As, Ba, Se, and Hg—the latter of which is often found in high concentrations in many coals).

R-203: Individual water quality issues will be handled through the submittal of permit applications for MPDES permits and through Water Management Plans. Specific constituents of concern can be addressed at that time.

C-204: In the Chapter 3 Hydrological Resources section on Surface Water, explain how TMDLs can be developed without holding present levels in the river, until 2005 and 2006 respectively.

R-204: The MDEQ and EPA are accelerating the development of TMDLs in the Tongue River and Powder River watersheds to allow for issuance of MPDES permits for CBM development.

C-205: EPA's analysis indicates that on average the water quality in the Powder and Little Powder rivers, which naturally are characterized by high EC and SAR, is likely to remain suitable for irrigation when untreated CBM-produced water is discharged to the rivers. This is contrary to the finding in the Montana Draft EIS, primarily due to the fact that the CBM-produced water is not as saline in the Powder River and Little Powder Rivers drainages as reported in the EIS.

R-205: The EIS used information collected from the CX ranch field and generally information on the CBM production in Wyoming to prepare the EC and SAR discussions for the Powder River Basin. Taking the conservative approach, The analyses are included in the Surface Water Quality Analysis Technical Report and summarized in the Hydrological Resources section of Chapter 4.

C-206: The Montana EIS suggests that CBM water quality may worsen as it flows overland due to dissolution of minerals. The Wyoming EIS states that little impact on CBM water quality is expected during conveyance. The Wyoming tributary study provides some information on the observed changes in water quality—generally EC worsens but SAR decreases.

R-206: The exact changes in water chemistry that occur when CBM produced waters contact the ground surface will be dependent upon the site specific minerals present, and the chemistry of the CBM water. In most cases it would be expected that these reactions will cause the salinity to increase as minerals are dissolved, and SAR to decrease when soluble minerals (such as calcite (CaCO_3) and dolomite ($(\text{Ca,Mg})\text{CO}_3$)) are dissolved. However, in some cases SAR may increase (as is the case when halite (NaCl) is present), or the salinity may decrease (as is the case when iron (Fe) is oxidized and precipitated from the water).

C-207: Ongoing processes directly relevant evaluating the impacts of CBM development including proposals by both the Northern Cheyenne Indian Nation and State to establish numeric water quality standards for EC and SAR.

R-207: The timing and development of water quality standards by the Northern Cheyenne and DEQ are outside of the scope of this EIS. However, the Northern Cheyenne standards and the draft standards being considered by the Board of Environmental Review were used to define the most and least restrictive limits in the surface water impact analysis in the Hydrological Resources section of Chapter 4.

C-208: In the Chapter 4 Environmental Justice section for Alternative C, Surface Water Quality, why doesn't the EIS contain a description of the draft numeric standards being proposed by Montana and the Northern Cheyenne?

R-208: See **R-207**.

C-209: The operations plan for the dam (agreed upon by the State, Tongue River Water Users Association, and the Northern Cheyenne Tribe in cooperation with the Department of Fish, Wildlife and Parks) calls for high flows in the spring to aid the spawning run in the lower Tongue River from the Yellowstone River, if there is sufficient snow pack. If there is not sufficient snow pack, the water is held for the irrigation season. Water is stored during the winter months for the spring irrigation season. Limiting discharge to high quality watersheds during the irrigation season will not assure that irrigators will have quality irrigation water.

R-209: Discharges will be monitored through the use of MPDES permits. Concerns about discharges that may affect irrigation waters will need to be addressed during permitting.

C-210: The TMDLs for the Tongue River should have an SAR above the dam of 1, below the dam of 1, and a wintertime SAR no greater than 1.5.

R-210: The timing and development of water quality standards by the state are outside the scope of this EIS. The MDEQ will establish limits for SAR in surface waters including the Tongue River, if approved by the Board of Environmental Review.

C-211: No information or data is presented about the long-term impacts of the saline water on livestock. Will reproduction problems be experienced? What's going to happen to our calf crop?

R-211: The National Academy of Sciences (National Research Council, 1980) has indicated that livestock water with a salinity less than 5,000 mg/l (EC less than ~

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7,000 $\mu\text{S}/\text{cm}$) is “generally satisfactory, but may cause diarrhea, especially on initial consumption”. Livestock water with a salinity less than 3,000 mg/l (EC less than $\sim 4,300\mu\text{S}/\text{cm}$) “should not affect health or performance, but may cause temporary mild diarrhea”. The MDEQ has set a maximum goal of 3,000 mg/l (Bauder, 1999) for livestock water. As CBM water is not anticipated to have a salinity greater than $\sim 2,100$ mg/l ($\sim 3,000$ $\mu\text{S}/\text{cm}$) this water should be suitable for livestock use, however livestock should initially be monitored after CBM water is provided to them, because in some cases the water could cause temporary diarrhea in animals not accustomed to such water. This problem should disappear rapidly as livestock adapt to the new water supply. Since undiluted CBM water is expected to be suitable for livestock use, surface waters that have received CBM discharges should also be suitable for this use.

C-212: Although the EIS lists Section 404 of the Clean Water Act as an agency responsibility, I can’t find in the EIS a description of wetlands or other special aquatic sites as they are defined under that law or an analysis of the impacts due to coal bed methane development on these resources. Has a Section 404 B (1) guideline report and analysis been completed?

R-212: Section 404 reports are site-specific and would be addressed in EAs and Water Management Plans in which site-specific data has been collected and impacts analyzed.

C-213: What actions has Montana taken to encourage or force the state of Wyoming to cease and desist from polluting waters that flow into Montana?

R-213: In addition to the Memorandum of Understanding between the states, the FEIS coordinates the calculation of cumulative impacts on the three streams (Tongue, Little Powder, and Powder) from Wyoming and Montana CBM. The coordination will allow the BLM from both states to control CBM discharge to non impact levels.

C-214: CBM water should be tested, monitored, and filtered or cleaned before being stored in ponds or released into waterways.

R-214: Testing, monitoring and treatment of CBM waters would be parts of the Water Management Plan devised by CBM operators, and approved by the appropriate agencies, for each CBM development area.

C-215: The quality of CBM water must be inspected and approved by a certified third party

inspector before it can be released into the surface water.

R-215: Qualified laboratories with no stake in the outcomes, and appropriate quality assurance and quality control procedures in place, would perform the analysis required by Water Management Plans. The results of this testing would be submitted to the BLM and/or the MDEQ. Confirmatory sampling would be conducted by the regulatory agencies when deemed appropriate. Analysis of mixed surface waters at established USGS monitoring sites will continue to be conducted by the USGS to ensure that beneficial uses of surface waters are not impacted.

C-216: CBM developers should be required to clean and re-inject the water back into the ground.

R-216: Re-injection would be one water management option under Alternative E, however in cases where produced water can be managed in another manner, without causing impacts to the environment, these methods would be considered as well. The actual management of water for a particular CBM project would need to be fully described in the Water Management Plan for that project, and approved by the appropriate regulatory agency. When produced water is managed by re-injection it needs to be injected into an aquifer of equal or lesser quality than the aquifer it was derived from. Therefore there would be no need to treat the water prior to re-injection.

C-217: No water quality analysis has been completed specifically for the Bozeman Pass area.

R-217: Analysis of CBM water in all areas would be required prior to a Water Management Plan being approved. At this time there are no wells finished in the target coals in the Bozeman Pass area from which to obtain a water sample.

C-218: All methane well water must be contained in sealed reservoirs. All such waters must be treated to remove salts before surface release and/or re-injection. Containment ponds should be lined to ensure that wastewater does not seep into rivers and streams.

R-218: The actual management of water for a particular CBM project would need to be fully described in the Water Management Plan for that project, and approved by the appropriate regulatory agency. When produced water is managed by re-injection it needs to be injected into an aquifer of equal or lesser quality than the aquifer it was derived from. Therefore there would be no need to treat the water prior to re-injection.

C-219: The EIS misleads the reader into believing that all produced water from conventional oil and gas

development will be put to beneficial use, when in reality, most of it will be discharged to surface waters.

R-219: Water produced from conventional oil and gas wells likely will be managed as they have been, mostly by deep injection. CBM-produced water will be managed in accordance with the operator's approved Water Management Plan. Depending on the quality of the CBM water and the quality of nearby surface water, disposal may involve surface discharge or other options.

C-220: It is possible that a change in livestock mineral balance will result from a change in the water quality because of CBM activities. This would necessitate using more expensive mineral supplements.

R-220: It is possible, but guidance documents from the State indicate that CBM water seen in the Powder River Basin is safe for livestock.

C-221: There should be a drawdown circle of influence of 20 to 30 to 50 miles.

R-221: The best numerical models of subsurface flow indicate that drawdown will extend much less than 20 miles.

C-222: Please explain why violations will be allowed of the Standards for Rangeland Health and Guidelines adopted by the BLM. Why isn't this issue addressed in the DEIS?

R-222: Compliance with current rules and policies on livestock grazing remain the surface landowners' responsibility. All users of public lands are to be in compliance with standards for Rangeland Health and Guidelines for Livestock Grazing in Montana, regardless of whether these activities are related to livestock grazing.

C-223: A greater amount of sampling should have been completed to get a more accurate estimate of the groundwater quality.

R-223: It was not in the scope of the EIS to generate new groundwater data. Under the National Environmental Policy Act (NEPA) federal agencies are required to use the "best available data" to analyze the impacts of proposed actions.

C-224: Groundwater permits should be valid for only 1 year, renewable after inspection demonstrating that the permit holder has complied with all rules and regulations and no adjustments to the plan for groundwater disposition need to be made.

R-224: Water Management Plans are reviewed periodically by the BLM to ensure adequate compliance.

C-225: Landowners should be able to write their own water recovery proposal for CBM development and have the initiative to recover their water.

R-225: MBOGC, and BLM require the operator to offer a Water Resources Mitigation Plan to every landowner within 0.5 mile of the planned CBM development. Landowners have the right to propose their own recovery method.

C-226: The DEIS is deficient in several areas, most importantly those regarding the ability to set standards of no degradation of the watersheds under the preferred alternative and the lack of analysis of existing and proposed regulatory water quality standards.

R-226: It is beyond the scope of the EIS to set water quality standards; this is a state prerogative set forth in statutes. The FEIS discusses forecast impacts under all the management alternatives to the several proposed state standards.

C-227: The MBMG should be responsible for collecting and compiling water monitoring information.

R-227: MBMG maintains groundwater monitoring wells in the Powder River Basin. Data from these wells, and those of other persons and agencies, are compiled and placed on the Groundwater Information Center (GWIC) website, which is maintained by MBMG. MDEQ is responsible for monitoring water discharge permits.

Lands and Realty

Comments and Responses

Comment 1 (C-1): Roads will tear up and divide the prairie and will cause other negative environmental impacts.

Response 1 (R-1): Roads will cause environmental impacts, which will be minimized through mitigation on public land as described in the FEIS, Chapter 4, Lands and Realty.

C-2: If vehicles carrying equipment and materials exceed legal limits, the appropriate over-weight permits will be required?

R-2: Vehicles carrying equipment and materials that exceed legal limits will acquire the appropriate over-weight permits from transportation authorities.

C-3: If pipelines are required to support oil and gas development and will cross state roadways or occupy the highway right-of-way, either utility, occupancy, or encroachment permits will be required?

R-3: Encroachment Permits and Utility Occupancy Permits will be required for CBM-related pipelines that intersect or occupy right-of-ways of Montana's highway system.

C-4: Anytime work is located within highway right-of-way, a traffic control plan should be submitted and authorized through the Montana Department of Transportation (MDT) district office. This includes accessing the work area through state highway right-of-way rather than local roads.

R-4: A traffic control plan will be submitted and authorized through MDT district offices any time work is located within a highway right-of-way. This includes when CBM development will need to access the work area through a state highway right-of-way.

C-5: The DEIS does not address local planning and zoning concerns.

R-5: CBM development will adhere to local planning and zoning regulations that are applicable to mineral development.

C-6: The FEIS should include a plan for using a single transportation corridor and utility corridors for access.

R-6: Alternative B considered primary transportation corridors and placement of utilities within the road right-of-way. Because of the perceived resulting checkerboard land pattern,

Alternative E—The Preferred Alternative encourages placing utility lines and roads in the same location but does not require the use of corridors.

C-7: Will I be able to demand that only organic practices be used on my surface property? And what about on leased BLM land?

R-7: Landowners will be able to negotiate terms into their contracts with the legal representative of the CBM developer. The definition of "organic practices" will need to be specifically defined and, if reasonable, could be negotiated. Practices on BLM lands will need to meet the present land use plan requirements as prescribed by the local BLM office.

C-8: Chapter 4, Assumptions to All Alternatives, lists acreages for land disturbances. Are the ranchers' existing trails included in this estimate?

R-8: The calculations for road disturbance are based only on new disturbance. If existing ranch unimproved roads are used, they will need to meet road construction standards to handle CBM traffic and would be considered new disturbance.

C-9: In Chapter 4, Lands and Realty, condemnation rights of the developer is discussed. Will this be the preferred method for CBM on split estate?

R-9: The FEIS has been revised to clarify this issue (see Chapter 4). Condemnation will not be the preferred method on split estates. However, surface owner agreements have been made part of the Project Plan.

C-10: In the Chapter 4 Lands and Realty section it states that surface disturbance from roads will be 30 percent more than Alternative B. Why does the preferred alternative promote more surface damage?

R-10: Alternative E (Preferred Alternative) would not require designated travel corridors with CBM development and production, and so road disturbance is anticipated to be 30 percent more than Alternative B, which requires travel corridors.

C-11: In the DEIS Chapter 4, Alternative B states, "Displace agricultural lands..." No data has been provided supporting these statements. Where are comments about increased irrigation capacity because of available water in areas where irrigation could not previously take place because of proximity to irrigation canals and rivers? Also, land value determinations do not happen until a person sells their property. To date, none of the landowners in Montana that have CBM development have sold their property.

R-11: Direct displacement of agriculture would occur where well pads and roads would be placed in

agricultural fields. The Lands and Realty section of Chapter 4 has been modified to show potential benefits from utilization of well water under Alternatives B, C, and D.

CBM development may be positive in areas that currently experience water shortages by providing an additional source of water. The BLM and State have made beneficial use a priority in the preferred alternative of the FEIS and through the designation of the Powder River Basin Controlled Groundwater Area. Beneficial uses can include potable water supply, irrigation, livestock water, and other uses.

Land value determinations can be adjusted by the county tax assessor if requested by the property owner with evidence that the property value has declined after CBM development. This adjustment would be based on the present land use category and if there is a direct conflict. The purpose of a landowner request would be to reduce his or her tax consequence to the county.

C-12: An alternative is needed that considers some percentage of roads on private lands that would remain open after production and closure.

R-12: Private landowners have the right to either close access roads or leave them open. This option is a part of each alternative.

C-13: How many tons of sand and gravel are required to construct these roads?

R-13: The amount of sand and gravel required to construct roads cannot be determined without knowing the exact location and topography of each road. These calculations would be completed on a well-by-well basis as part of the development planning.

C-14: What is the total number of miles of roads required for one CBM well? What about roads to compressors, water management facilities? Where is the estimate of round trips per day?

R-14: It was estimated that each well will require 0.21 mile of two-track road, 0.075 mile of graveled road, 0.05 mile of bladed road for construction, and 0.06 mile of bladed road for operation. The Assumptions for Access Roads sub-section to Lands and Realty in Chapter 4 does not give an average road length requirement for field compressors or water management facilities. As discussed in Chapter 4 under the General Assumptions sub-section, it is anticipated that exploration wells will be visited once per day during testing and pumping. During production, wells will be visited once per week.

C-15: In Table 4-15 of the DEIS, the second footnote states that at an average of 8 wells per square mile, 2,287 square miles would be intensively impacted by intensive CBM development. At 24 wells per square mile, 762 miles would be impacted by intensive CBM development. Won't three times the number of wells impact three times the number of square miles?

R-15: As well density increases, the wells will be packed in closer together and less area will be required for the same number of total wells.

C-16: What will be the mitigation measures for private land? Will landowners have to abide by the limitation in Table 4-16 (DEIS)?

R-16: Mitigation for impacts on private land will be the responsibility of the landowner during negotiations with the CBM producer. Exceptions would be impacts on wetlands and threatened and endangered wildlife or other federal regulations that apply to private property. This table only refers to BLM administered lands, which includes split-estate lands with Federal minerals.

C-17: Why is there no discussion concerning the loss to the aesthetics of public lands from a landscape cluttered with wells and compressors? These are lands used for valid, beneficial uses by hikers, birdwatchers, and hunters.

R-17: Visual impacts are analyzed in the Visual Resource Management Section of Chapter 4 in the EIS.

C-18: Can the EIS explain the statement, "There are no legally required buffer distances between CBM facilities and residential, community or government dwellings"? What are the potential effects on nearby properties? In 82-11-111 of state law, the MBOGC is required to take measures to protect property owners. Will any mitigation measures be taken to protect homes and communities?

R-18: The use of a mandated buffer distance from residential properties or government facilities is not described in 82-11-111 of the state law. However, the MBOGC and BLM do apply conditions-of-approval to drill permits to protect surface owner operations, residences, community facilities etc. There are also, some local municipalities that have prescribed setbacks for oil and gas facilities. Other mitigation measures developed to protect human activities include the use of surface owner agreements, noise restriction for compressors and visual camouflage techniques.

C-19: In Chapter 4, Alternative B states that CBM-related traffic would maintain a safe speed that would also control dust when approaching adjacent residential dwellings. Who will monitor this and how will speed limits be enforced? What will the speed limit be and

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what authority will landowners have in keeping traffic speeds within limits?

R-19: Landowners will need to monitor CBM traffic around their respective residences. If speeding violations are occurring, they will need to contact the CBM operator and file a complaint. It will be the responsibility of the CBM operators to enforce speed limit compliance on their employees. If speeding violations are occurring on county or state roads, local law enforcement authorities could be contacted.

C-20: In Chapter 4, Alternative B, who will enforce public access?

R-20: Public access or access for the public across privately owned land is granted by the landowner. Access across private land is governed by State Law and enforced by the local law enforcement office. Public access from a public road to BLM surface is allowed without permission from BLM or a private owner when privately owned land is not crossed.

C-21: Do well heads, field compressors or sales compressors have lights on at night? The EIS does not address the impacts of night lights scattered throughout the countryside.

R-21: CBM facilities do not have night lights. Lights may be on a drill rig temporarily.

C-22: How will irrigators be compensated for the reduced value of their land resulting from the use of CBM water?

R-22: As discussed in the Hydrology section, CBM water quality can range from good to poor quality. Application of good quality water would improve the value of land. Water discharged as part of the Preferred Alternative is not permitted to degrade water quality in the watershed, so its quality will be at least as good as existing water quality resulting in no impact.

C-23: Drilling in the Powder River area will add 26,000 miles of new roads, 50,000 miles of new pipelines, and utility corridors?

R-23: Chapter 4, Assumptions Common to All Alternatives, details the level of disturbance that is anticipated from roads and utility/pipeline corridors. Additionally, the General Assumptions section states the average production rate for the 20-year life of a well is 2.5 gpm. If full field development occurs, a total of 16,500 wells is expected. This results in 9,900 miles of new road, 23,000 miles of new pipeline and utility corridors, and 434 billion gallons of produced water.

In addition, the use of combined corridors—a mitigation measure for several alternatives including the Preferred Alternative—for roads and utilities is expected to reduce these impacts by 35 percent. Produced water would not be discharged to streams and rivers in the project area, because portions would be beneficially used, lost via evaporation, and other potential losses.

C-24: This study ignored the farmers and ranchers. Private landowners and effects on them are not addressed; the EIS only addresses government land, tribal land, and state land.

R-24: Impacts on private land would be the same as those identified for public lands. The major exception is that private landowners will be responsible for negotiating project activities, mitigation, and restoration directly with the CBM producer.

C-25: Who will be responsible for damages to neighboring wells or property from methane escaping after water pressure is removed?

R-25: CBM producers are responsible for impacts or damage from their operations.

C-26: The DEIS does not mention the potential for CBM-caused wildfires in forested areas—from methane leaks, electrical fires during drilling, fires from ruptured gas pipelines, careless smokers, and gas migrating from domestic wells contaminated with methane gas—and offers no mitigation measures.

R-26: A discussion about fire, as well as fire suppression and protection measures, is included in the Lands and Realty section of Chapter 4. CBM operators would have to comply with state and federal regulations affecting operations on state and federal lands, including restrictions, liability and suppression responsibilities. CBM operators will prepare and maintain safety and emergency operating procedures for their operations. BMPs and mitigation measures, such as clearing vegetation from drill sites, having portable fire extinguishers in all trucks and around wells, phone numbers to call in case of fire, fire prevention procedures, evacuation plans, and conducting employee fire safety training would reduce or eliminate the opportunity for CBM operations to ignite wildfires. .

C-27: Federal and state agencies should join with private landowners to consider an area closure approach rather than individual road closure restrictions to control potential off-road travel and direct public use of corridor access on all land ownerships during the life of CBM development in the Powder River Basin.

R-27: The area being considered for the majority of CBM development is approximately 7 million acres.

Currently, the exact areas that will be developed are not yet proposed and the placement of roads has not yet been determined. As this information becomes available, and when and if the use or misuse of CBM

road networks by the public becomes a management issue, the land use plan will be revisited to determine if more planning is needed.

Livestock Grazing

Comments and Responses

Comment 1 (C-1): The EIS does not address the effects of long-term saline consumption on herd quality, herd reproductivity or meat quality.

Response 1 (R-1): The FEIS states that the use of CBM water for livestock watering is generally acceptable for waters less than 10,000 mg/l TDS (Chapter 4, Livestock and Grazing, Alternative A). See reference for ALL 2001a, which gives more detail to suitability of water for livestock, and the effects of high saline waters on livestock.

C-2: Why aren't mitigation measures for the loss of AUMs part of the preferred alternative?

R-2: The mitigation measures would be similar to those discussed in Impacts From Management Common To All Alternatives, which is referenced in Alternative B. See the FEIS, Chapter 4, Livestock Grazing, Alternative E (Preferred Alternative).

C-3: The EIS discussion of water impoundment for livestock use does not appear to recognize that the livestock carrying capacity of the rangeland will determine the amount of CBM water than can be put to livestock use.

R-3: The FEIS does recognize that the use of CBM water for livestock watering will be a small amount of the overall amount available (Chapter 4, Livestock Grazing, Conclusions). The use of water impoundment is one of many BMPs available for CBM operators to utilize for handling produced water. In some areas of the RMP the addition of water impoundments will increase availability of forage, which will in turn increase the carrying capacity of the rangeland.

C-4: The BLM lands in Montana are subject to Standards and Rangeland Health and Guidelines for Livestock Grazing Management for Montana. Under section 43 CFR 4180.1, fundamentals of rangeland health criteria for livestock grazing are mandated. Will the coal bed methane companies be held to the same criteria?

R-4: All users of public lands are to be in compliance with standards for Rangeland Health and Guidelines for Livestock Grazing in Montana, regardless of whether these activities are related to livestock grazing. Like other oil and gas operators, CBM operators would be required to have a BLM approved weed management plan and reclamation plan for operations on BLM surface.

C-5: What will be the long-term impacts on grazing lands, in regard to production? Will it change weed, forb, and grass species?

R-5: Chapter 4, Vegetation, discusses possible permanent losses of vegetation, land use, and changes in weed and plant species. The long-term effects on grazing lands may be minimized by the restoration of production areas after completion of the CBM production. Changes to weed, forbs, and grass species can be minimized by the surface owner through negotiations with CBM operators during Project Plan preparation.

C-6: We could be faced with a mosaic of CBM facilities, well pads, etcetera, spread out through hay fields and pastures. How as ranchers are we to continue to have good productivity given that scenario?

R-6: Under Alternative E (Preferred Alternative), the surface owner will be involved with the CBM operators in the Project Plan preparation and will have input into CBM development.

Recreation

Comments and Responses

Comment 1 (C-1): How will the recreational impacts of CBM development affect local economies? Will outfitters be compensated for loss of income?

Response 1 (R-1): CBM development effects on recreation and thereby local economies can be positive or negative. Where CBM enhances a particular recreational activity, it will improve local economies. An example would be enhanced access to fishing areas bringing in more fisherman. Where CBM degrades a particular recreational activity, it will depress local economies. An example is where CBM development changes big game movement patterns. The local outfitters in the abandoned area would realize an effect, but the outfitters in the area to which the animals moved would experience a benefit. Outfitters will not be compensated for loss of income, unless it is part of the surface owner's agreement with the company.

C-2: What effects will CBM development have on hunting?

R-2: As discussed in the Chapter 4, Wildlife, new access roads are likely to increase legal and illegal hunting activities in areas not previously heavily hunted.

C-3: How will CBM-related discharges into the Tongue River and reservoir affect recreational activities in those areas?

R-3: Water discharged into the Tongue River and Reservoir will meet state water quality standards, so no effects will be observed due to water quality. If CBM water is discharged into the river, flows would increase thereby enhancing water-related recreation.

C-4: The EIS contains no provisions to safeguard hunting and fishing.

R-4: While increased roads will provide better access for recreational activities, they will also affect fish and wildlife and recreational activities associated with those populations. CBM development could displace game species, which may affect hunting in certain areas. Conversely, discharge of treated CBM water into streams currently dewatered would open up new fishing opportunities. Safeguards related to hunting and fishing include leasing stipulations that protect reservoir fisheries and concentrated recreation sites and scheduling exploration activities, where possible, to avoid peak recreation periods.

C-5: Will the property owner be held responsible if a hunter damages a well or related equipment on that person's property?

R-5: Any vandalism to private property including a well or other related equipment would be the responsibility of the person committing the vandalism. In cases where the property owner is leasing the hunting rights to their surface, they maybe responsible for damages caused by the hunting parties to any wells or related equipment. Property damage should be reported to and investigated by local law enforcement officials.

C-6: If we go forward with this development without very stringent controls, we're going to see habitat even further destroyed. This is one of the last places in eastern Montana where sportsman can go, (state land, BLM land, Forest Service land).

R-6: Access to public land will not be curtailed with this proposed project. Mitigation measures and stipulations discussed in the EIS are implemented to protect natural resources.

C-7: CBM activity should be excluded during the hunting season.

R-7: CBM-related drilling and construction activities would not inhibit hunting activities and would only temporarily disperse game populations (see Chapter 4, Wildlife).

Social and Economic Values

Comments and Responses

Comment 1 (C-1): The EIS acknowledges that CBM development will decrease property values but needs to be more specific about the causes (e.g., noise, land disturbance, reduced productivity, and loss of groundwater). Can you quantify the losses?

Response 1 (R-1): Property values could be reduced temporarily during the life of a CBM project by different factors, such as increased noise and reduced productivity, among other factors. It is difficult to quantify impacts to property values without specific proposals for an APD or Project Plan. Economic impacts would be addressed in the environmental analysis conducted for a specific proposal. The impact of actions in each of the alternatives is discussed qualitatively in Chapter 4, Social and Economic Values.

C-2: Taken from Chapter 4, Property Taxes: Property owners would experience an increase in assessed values and an increase in property taxes while at the same time those property owners dependent on irrigation would experience a decrease in production (and income) caused by the high SAR CBM discharge water.

R-2: The discussion in Chapter 4, Taxes, indicates that increases in assessed property values would be associated with improvements to properties associated with CBM development. See Chapter 4, Social and Economic Values and Response #1 for discussion on decreases in property values.

C-3: There is no discussion of the potential for residential property value depreciation associated with CBM development. The impacts need to be described qualitatively, and if possible, such losses should be quantified.

R-3: See **R-1**.

C-4: Discussion of the effects of CBM development on local tax revenues does not adequately consider potential reductions in property values and the potential for long-term impacts on property tax revenues resulting from less productive lands and contaminated water. Will there be any mitigation measures to compensate for property tax losses?

R-4: See **R-1**.

C-5: Landowners using the land to grow crops and cattle will suffer extreme economic consequences as a result of not being allowed to own the mineral

rights to their own property. Will such landowners be compensated for surface damages?

R-5: Compensation of land owners for use of mineral rights and for land disturbance due to CBM development is discussed generally in the FEIS in Chapter 3, Private Landowner Revenue.

C-6: I cannot understand how the surface owner's individual property rights can be so blatantly ignored or the primacy of surface land owners recognized. Split estate issues are a huge concern, but the discussion of the rights of surface owners is vague and does not address compensation for surface damage.

R-6: See **R-1** and **R-5**.

C-7: Can you define the costs to landowners (e.g., from reduced property value, surface damage, degraded water quality)? Will landowners be compensated for these losses?

R-7: See **R-1** and **R-5**.

C-8: How will landowners be paid for the gas taken out? If I own mineral rights including coal, who pays who?

R-8: See **R-5**.

C-9: The study examines the potential revenues from CBM development but gives little consideration to costs such as lost recreational revenues, devaluation of property values near CBM development, lost or damaged water resources, etc. Will there be any measures taken to mitigate these costs?

R-9: See **R-1**.

C-10: In Chapter 4, the statement, "Most of this revenue would go to methane companies located out of state" is unsubstantiated. Out-of-state capital will flow into the state (if CBM development is not unduly burdened) through royalties, payments to workers and support businesses, and revenues of local entrepreneurs.

R-10: The statement from Chapter 4, Government Revenue, "Most of this revenue would go to methane companies out of state" is unsubstantiated as the comment suggests. The statement was revised to read, "Most of this revenue would go to methane companies and would accrue to the companies in the states where they are located."

C-11: Chapter 4 in the EIS specifies that most of the revenue would go to methane companies located out of state. Why didn't the previous analysis figure this out?

R-11: See **R-10**.

C-12: The analysis of environmental effects in the EIS does not adequately describe the extent to which benefits associated with CBM development are realized by private entities located outside the planning area, while many of the costs of development accrue disproportionately to existing residents of the planning area. CBM revenues (excepting royalty payments and taxes) constitute economic benefits realized outside of the planning area, and should be identified as external benefits. The value of CBM equipment and supplies acquired from outside the planning area should likewise be identified as external.

R-12: The comment is correct, as the EIS discloses, that some economic benefits of CBM will accrue to entities (e.g., a methane company) located out of the planning area or out of state (as indicated in the Chapter 4 discussion) while the physical impacts of CBM will be located within the planning area. (See also **R-10**).

C-13: The Gallatin Pass and Bozeman regions need to be evaluated separately because average land values and per capita incomes in those areas do not compare to those in other parts of the planning area. The EIS offers no meaningful analysis of the potential impacts that CBM development is likely to have on property values, economic development opportunities, and tax revenues in these areas. There is also no mention of potential alternatives to mitigate the losses these communities will experience under full development.

R-13: The socioeconomic analysis was conducted at the county level, in keeping with the intent of the EIS and the fact that specific CBM well locations have not been identified. As a result, a specific analysis of property values, economic development opportunities, and tax revenues in the sub-county locations identified is not appropriate or feasible. Site-specific evaluations to be conducted as part of the drilling permit process would be used to quantify changes in valuation at specific locations.

C-14: Due to high population growth rates, the homeowner and rental vacancy rates in Gallatin and Stillwater counties are significantly different from rates in other areas such as Powder River County. The text of the EIS should note these disparities in the discussion of the average rates.

R-14: The comment correctly points out that housing vacancy rates in a sub-county area may be different than the county averages reported in the text. For clarity, the following statement will be added to the discussion of housing vacancy rates in Chapter 3,

Social Organization: “Although the vacancy rates reported here illustrate averages in the counties and in the planning area, sub-county variations may exist as a result of factors such as a high population growth in a portion of the county.”

C-15: Totally missing from the EIS are concerns for the impact of health, safety and general welfare issues in Gallatin and Park counties.

R-15: Gallatin and Park counties are two of the 16 counties included in the CBM planning area. Socioeconomic analysis for these two counties are provided in similar detail as the rest of the planning area counties. More detailed information on health, safety and general welfare issues for these or any of the counties is beyond the scope of this EIS.

C-16: The EIS cannot be considered complete without studies of effects of CBM development on property values in areas such as Wyoming, Colorado and New Mexico.

R-16: The impact of the alternatives on property values is discussed qualitatively in Chapter 4, Social and Economic Values. Because specific CBM well locations have not been identified, it is beyond the scope of this EIS to identify (and hence quantify) specific losses. The studies from Wyoming, Colorado and New Mexico are likely to provide useful information for site-specific evaluations to be conducted as part of the drilling permit process.

C-17: This project stimulates tremendous growth in the economy by generating additional revenue for the counties and state, and directly and indirectly creates jobs for the citizens of Montana. The EIS needs to reflect that many counties in the planning area and Montana in general need economic development and a stronger tax base. CBM development will bring much needed new jobs.

R-17: The socioeconomics portions of the EIS describe employment and income information for the state and the affected counties (Chapter 3) and the potential for change related to the CBM alternatives (Chapter 4). Attitudes, beliefs, lifestyles and values related to CBM development are also described generally in these sections. However, it is not for the EIS to judge the degree to which the economic benefits of CBM development are wanted or needed by individuals or communities.

C-18: In the section on demographics, the EIS should make clear that a declining population in the production area represents a significant need for jobs, economic development and diversification of the economy. Responsible development of CBM resources would have

a very positive impact on the economy of the production area.

R-18: See **R-17**.

C-19: A scientific poll, conducted by Montana State University at Billings and reported in the *Billings Gazette* on November 14, 2001, showed 63.2 percent of those polled supported CBM development in Montana if reasonable precautions were taken to protect the environment. Only 11 percent said CBM should not be developed, with the same percentage (11 percent) saying that it should be developed as quickly as possible. Lastly, 15.3 percent were undecided.

R-19: The results from this poll, as reported in the *Billings Gazette*, were added to the section titled Newspaper Reports in the Socioeconomics Appendix.

C-20: There is no discussion of the social-economic effects of the boom and bust development that will occur with CBM. What will be the long-term effects of abandoned production facilities, pipelines, roads and commercial and residential developments on the economic health of our communities? In particular, what will be the effect of a “bust” cycle on our public facilities?

R-20: Although not labeled as such, a “boom and bust” cycle of economic development is illustrated to some extent in the socioeconomic analysis presented. For example, the jobs and wages tables shown in Chapter 4 of the EIS are associated with various phases of CBM development. These demonstrate a pattern consistent with this concept. The general conclusions made with respect to public services and utilities apply to communities’ ability to respond to the long-term costs and benefits of CBM.

C-21: Can you provide an analysis of the long-term costs to wildlife, fisheries, tourism, and agriculture? How about long-term effects on schools and other public facilities? Will there be any mitigation measures?

R-21: Several sections of the EIS analyze in depth the potential physical impacts of CBM on natural and cultural resources. The Social and Economic Values section includes a discussion of jobs and wages and a qualitative analysis of economic impacts on public services and utilities and water resources values. However, further analysis or quantification of long-term economic impacts is not feasible given available information and the scope of the overall document.

C-22: Can you discuss the cumulative effects to water quality and quantity associated with CBM development? Will there be any protections? The potential economic impacts of changes to water quality and quantity warrants more detailed discussion than what is in the EIS. Will users, including agricultural users, be compensated for water quality degradation and reductions in available supply? Who will pay?

R-22: Effects to water quality and quantity are discussed in detail in the Hydrological Resources sections of Chapter 4. The differences in management of produced water, and mitigation for impacts on water quality and quantity, are discussed there and in Chapter 2 (Alternatives). The potential economic impacts on water resources associated with the various alternatives are discussed qualitatively in the socioeconomic impacts section of Chapter 4. However, a more detailed or quantitative analysis is beyond the scope of this document.

C-23: The EIS does not address the potential for impacts of CBM development, and its resulting industrial traffic, on children attending school in close proximity to such operations.

R-23: While CBM development would bring additional truck traffic to selected locations, any air pollution associated with this traffic would not be at levels that would impact human health. See also the discussion of roads in Chapter 4, Lands and Realty.

C-24: The EIS ignores the myriad costs to agriculture of CBM development, including effects on productivity and water supplies. Have pre-development baseline data for agricultural economics in this area been collected so that the losses from CBM development can be documented? How will agricultural businesses be compensated for their losses? Will ranching remain viable after CBM development?

R-24: Costs to agriculture from CBM development would be related to physical disturbance of the land or water or to changes in the socioeconomic environment. Physical changes to soils and water are discussed in the Soils and Hydrological Resources sections, respectively, of Chapter 4. Socioeconomic impacts, including jobs, employment, and water resource values, are discussed in the Socioeconomics section of Chapter 4. Mitigation for impacts is discussed generally in Chapter 2 (Alternatives) and specifically for each of the alternatives in each of the resource sections. Further quantification of costs to agriculture is beyond the scope of this document.

C-25: Can the EIS address the indirect impacts on agriculture such as the impacts of lower land values on farm loan availability, terms, and collateral?

R-25: The potential for impacts on land values is discussed in Chapter 4, Impacts From Management Common to All Alternatives. To the extent that agricultural land values are lowered, they could have indirect impacts such as those described in the comment. However, a quantification of such impacts is beyond the scope of this analysis.

C-26: What will be the costs of dewatering aquifers and who will pay the costs, particularly after the boom times? How will these costs be quantified?

R-26: Aquifers will not be dewatered; see discussion in Hydrological Resources section of Chapter 4 for discussion of physical impacts on water resources. Economic impacts associated with water resources are discussed qualitatively in the Socioeconomics section of Chapter 4.

C-27: What will the effects of CBM development be on community social structures? The EIS does not address this or show how communities will benefit from CBM development.

R-27: Community social structures—assumed generally to mean the status quo of a given community—could be affected (positively or negatively) by changes to a number of factors. The Social and Economic Values section of Chapter 4 analyzes changes to the primary factors—population, housing, employment, public services and utilities, attitudes and beliefs, income and revenues—in relation to the CBM alternatives being considered. Because the location of individual CBM wells has not been established, a more detailed analysis of impacts on specific communities is not feasible as part of this document. Site-specific evaluations will be conducted as part of the drilling permit process.

C-28: Will farmers be compensated for losses incurred during reclamation?

R-28: Surface owner compensation would be paid by the well owner as negotiated in the surface owner agreement that is required prior to initiation of work on private lands.

C-29: What effects will CBM production have on the region's economy and its cultural values? The impacts on recreation, tourism, and agriculture will be staggering. What protections will there be?

R-29: Impacts of the CBM alternatives on the regional economy and on cultural values are discussed in the various subsections of the socioeconomics analysis in Chapter 4. See also **R-39**.

C-30: Will public sector revenues be sufficient to offset public sector costs? The EIS does not offer sufficient quantifying detail to determine this.

R-30: Impacts on public sector costs and revenues are discussed for each alternative in the “Public Services and Utilities” and the “Government Revenues” sections of the socioeconomics analysis in Chapter 4. The comment is correct in stating that the document does not quantify all costs and benefits in a way that allows them to be compared quantitatively. Instead, qualitative conclusions are made based on the level of information available.

C-31: What costs will be incurred by municipalities like Glendive, which depends on Yellowstone River water as its drinking water supply? What will it cost to treat water polluted by CBM development to meet the standards of the Safe Drinking Water Act?

R-31: Potential physical and economic impacts on water resources are discussed in the Hydrological Resources and Social and Economic Values sections, respectively, of Chapter 4. Further quantification of costs is beyond the scope of this EIS.

C-32: In Chapter 3, the EIS should clarify that public services are dependent on the tax base of the county and community where the services are employed.

R-32: The following statement was added to the end of the Public Services and Utilities paragraph in Chapter 3, Public Services and Utilities: “Public services are generally funded by tax revenues, although there may be other sources of revenue (e.g., user fees, utility franchise fees). The tax base of the county or community where public services are employed is often a key component of this funding.”

C-33: The EIS incorrectly assumes that CBM property taxes will provide benefits to local government. The only property taxes that apply to CBM are business property taxes, and these are scheduled to phase out by 2006.

R-33: The comment is correct. The only property taxes that apply to CBM development are business property taxes, and these are scheduled to be phased out by 2006. The text was revised to reflect this change. This change does not affect the quantitative economic information provided in the analysis.

C-34: The EIS analyzes employment as if CBM workers would live close to where they work. Experience indicates, however, that most workers are likely to live in Wyoming as will the white collar workers. The EIS should address where workers are really likely to live and limit general statements about personal income increases.

R-34: The EIS acknowledges that individual choices about where to live are difficult to predict (Chapter 4, Housing Units and Vacancy). Because of the nature of the EIS, only general analyses of housing supply (Chapter 3, Social Organization) and demand were attempted. However, if some workers would choose to live in Wyoming as the comment suggests, the size and potential impacts of new population in any given location in Montana would be reduced.

C-35: Why was Sheridan not considered as a place where workers would reside?

R-35: See **R-34**, above.

C-36: CBM development could create a short-term increase in school enrollments, but any increases in tax revenues would lag behind. As a result, school budgets will not keep pace with costs unless voters approve mill levies as a “fail safe.” Can the EIS address this issue?

R-36: The potential lag between an increase in school enrollments and increases in tax revenues is acknowledged. However, it does not change the conclusions of the analysis.

C-37: The analysis of the effects on personal income needs more detail. Discussion on p. 4-87 alludes to losses but does not quantify them.

R-37: Changes to personal income are described in Chapter 4. Further quantification is not feasible at the level of this analysis.

C-38: Although the effects of wage substitution are mentioned briefly, the analysis contains no real discussion of the offsetting effects of job and income substitution against job creation associated with CBM development. This analysis should also consider the effects on employment of reductions in agricultural land.

R-38: The comment correctly points out that job and/or wage substitution could occur as a result of the influence of new CBM jobs, as mentioned in Chapter 4, Social and Economic Values, in the Personal Income section. A more detailed analysis would require specific information on the location and number of wells at a given location and at a given time. Given the nature of this document, such analysis is not feasible.

C-39: Can you provide more detail on the effects of CBM development on jobs associated with recreational and agricultural enterprises? How will disruptions in these industries affect the overall economy of the state and region?

R-39: Analysis of the effects of the CBM alternatives on employment, income, and revenues are discussed in the socioeconomics section of Chapter 4. Although specific sectors of the economy, such as recreation and agriculture, could be affected, further quantification of impacts is not feasible given the nature of this document.

C-40: The EIS contains no analysis to support the assertion that a significant number of jobs resulting from CBM development will be filled by existing residents of the planning area (DEIS 4-76, 4-80).

R-40: The text from Chapter 4 states that CBM jobs would be filled by a mixture of local labor and in-migrants. This conclusion is based on the discussion of existing labor force and employment statistics presented in Chapter 3 and on the types of jobs anticipated to be available as discussed in Chapter 4, Social and Economic Values.

C-41: Past, present and future employment in the petroleum industry was not reviewed in the detail given other industries. Since this EIS is about petroleum development, it seems a curious oversight.

R-41: Employment trends by major sector are shown in the Social and Economic values section of Chapter 4. While further information on petroleum industry employment might be interesting for reference, the more general employment statistics reported here are adequate for the level of analysis needed to disclose the impacts of the alternatives.

C-42: How many jobs would be created in Montana?

R-42: Potential new jobs related directly and indirectly to CBM development are discussed for each of the alternatives. Precise numbers of total jobs created were not estimated and would not be useful to the analysis due to the range of factors and the uncertainties associated with them.

C-43: In Chapter 4, a study is referenced for Alternative A. Aren't the actual numbers of jobs created known for the CX Ranch field? Table 4-9 of the DEIS should be obsolete if known wages are attainable. Are any of the employees paying income tax in Montana?

R-43: Because of the relatively smaller scale and preliminary stage of CBM development on the CX Ranch, the data from the Anderson ZurMuehlen report cited on in Chapter 4 provided a better estimate of jobs creation for the CBM alternatives. The estimates of wages in the Social and Economic Values section tables are the best available and are based on actual wages in the CBM emphasis area.

C-44: The discussion of state income tax revenues should note that federal taxes are generally deductible in Montana.

R-44: While it is accurate that federal taxes are generally deductible in Montana, this fact does not change the results of the economic analysis presented.

C-45: Have comparative economic estimates and analyses been done to establish that the proposed CBM plans are economically viable for the state?

R-45: The economic viability of the CBM development plans is beyond the scope of this analysis.

C-46: The EIS places a much greater emphasis on quantifying the economic benefits of CBM development versus its discussion of the costs associated with CBM development in the planning area. While the costs associated with dispersed CBM development may be difficult to quantify, a reasonable effort should be made to ensure a balanced presentation of both the benefits and the costs of potential development. A draft without this information is incomplete.

R-46: The comment is correct in stating that quantitative economic information on CBM costs is much less available than on CBM benefits. For this reason and because of the nature of this analysis, qualitative information was used in many cases. However, it does not follow that the analysis of economic costs and benefits of the alternatives is unbalanced or incomplete.

C-47: In its assessment of the attitudes, beliefs, lifestyles and values of residents in the planning area, the EIS relies on several sources whose applicability is open to question. For example, the study relies on information from the 1986 report *Natural Resource Development in Montana* (referenced on page SEA-3 of the Socioeconomics Appendix in the DEIS). Montana's demographic profiles and many of the socioeconomic/cultural values of its citizens have changed since 1986. While certain components of the 1986 report are undoubtedly still valid, others have changed, or changed in relative importance, in the past 16 years.

R-47: The information on Attitudes, Beliefs, Lifestyles, and Values presented in the Socioeconomics Appendix is based on a number of sources, including some that are relatively old. Limitations on the applicability of some of this information to individuals or specific population

subgroups are discussed in the Socioeconomics Appendix and in Chapter 3.

C-48: There is no discussion of the cumulative socioeconomic effects of CBM development in Wyoming and on private lands both within and outside the planning area.

R-48: Cumulative effects are discussed in the conclusions section for each alternative found in Chapter 4, Social and Economic Values. Potential impacts of future CBM development in Wyoming were beyond the scope of this analysis.

C-49: Where is the data on the socioeconomic effects of CBM surface water discharge and groundwater impoundment to downstream communities?

R-49: A general discussion of the socioeconomic impacts of water resources impacts is included with the analysis presented for each alternative, Chapter 4, Social and Economic Values.

C-50: Can you address the effects of property devaluation in the affected area on the rest of the state?

R-50: The potential for property devaluation and appreciation in certain locations and circumstances is discussed in Chapter 4, Impacts From Management Common to All Alternatives. Property value changes in the CBM planning area could affect the state as a whole. However, because specific CBM well locations have not been identified, it is not possible at this time to identify specific property value changes. Site-specific evaluations to be conducted as part of the drilling permit process would be used to quantify changes associated with a given location.

C-51: The EIS does not include an adequate discussion of the increased demands on mental health agencies, emergency medical services, drug and alcohol treatment centers, law enforcement agencies and fire control capabilities likely to result from CBM development. The effects on county services should also be analyzed in connection with projected development on reservations.

R-51: The potential impact on public services and utilities is discussed for each of the alternatives in Chapter 4, Social and Economic Values. Additional detail regarding quantitative impacts and impacts at the sub-county level will be addressed in subsequent site-specific analyses.

C-52: Can you explain the statement in Chapter 4 that "Any resulting increases in demand on public services and utilities are anticipated to be within the capacity of the providers"? Accounts from Wyoming indicate the opposite is true.

CHAPTER 5

Social and Economic Values

R-52: See Chapter 4, Social and Economic Values, for additional text. Because additional workers will be required, a population influx will occur affecting housing, city and county services, recreation, and other public services. However, because the changes in population would be moderate and dispersed throughout the CBM emphasis area, any resulting increases in demand on public services and utilities are anticipated to be within the capacity of the providers.

C-53: There is no support for the assumption in the EIS that real estate price escalation would be associated primarily with an increased demand for “small ranchettes” (EIS 4-75). While the analysis describes the presence of temporary housing opportunities “in and around the large cities ... as well as major tourist or recreation areas” (EIS 3-52), there is no description provided for the relative availability of temporary housing in the planning area. The relatively high homeowner and renter vacancy rates for the planning area (EIS 3-52) suggest, however, that the demand for housing associated with CBM development would be unlikely to result in a significant appreciation in local real estate values. In addition, the oil and gas industry historically is associated with an increase in temporary and modular housing, not “ranchettes.”

R-53: The sentence from Chapter 4, Impacts From Management Common to All Alternatives, that stated “Small ranchettes located within the area would increase in value because of the demand for additional housing” is unsubstantiated and was deleted.

C-54: Why are the most recent vacancy housing estimates in the EIS based on 1990 data?

R-54: This information has been updated with data from the 2000 census.

C-55: Is there a mechanism for landowner input on drilling and leasing and mineral estate issues? Will private landowners be notified prior to beginning of work?

R-55: For landowners without mineral rights, gas operators are required by law to notify the owner prior to initiation of work and to enter into an agreement with the surface owner. The agreement typically addresses the location of wells, roads, etc.

C-56: The EIS does not consider an Alternative in the section “Alternatives Analyzed in Detail” analyzing social and economic and environmental impacts on surface owners of Federal minerals. What would be the effect of such an Alternative and why

did not the current analysis deal in detail with this situation?

R-56: The potential for environmental and socioeconomic impacts on surface owners of federal minerals is addressed in the analysis of the alternatives. For example, economic impacts related to surface owners are discussed in Chapter 4, Attitudes, Beliefs, Lifestyles, and Values, Personal Income.

C-57: The EIS needs to provide better and more detailed analysis of costs and benefits related to impacts in the areas where they are most likely to occur—the high CBM potential areas. Big Horn County is projected to have 7,000 or 38.3 percent of the total 16,500 wells in the RFD. Our county does not have the resources to research the potential impacts; we must rely on the EIS to disclose this information and to provide reasonable options for mitigation.

R-57: The potential for greater socioeconomic impacts in the areas where the most CBM wells would be located is acknowledged in the socioeconomics section of Chapter 4. However, a more detailed analysis of such impacts is not appropriate given the level of this EIS document.

C-58: The EIS needs to provide more information regarding road and bridge operations. Experience in Wyoming shows that existing roads are used extensively and are not, as the EIS claims, lightly traveled. Who will pay to maintain private bridges used for CBM development and operation? What is the basis for the statement on p. 4-83 that the majority of new roads would subsequently become county roads? Will tax revenues increase to cover this added cost?

R-58: The sentence from Chapter 4: “Although the construction and maintenance of utilities would be funded by the users, the majority of new roads created to access CBM wells would subsequently become county roads” was revised. It now reads: “The construction and maintenance of utilities would be funded by the users. The decision as to whether to maintain roads upon abandonment of CBM facilities will be up to the land owner, which could be either a public or private entity.” Assumptions regarding abandonment of roads for the various alternatives are provided in Chapter 2.

C-59: The quantity of economical oil and gas resources and market implications is not addressed in the discussion of socioeconomic effects. It is unlikely that the amount of gas produced from within the planning area would have a significant effect to national energy supplies or prices.

R-59: Energy markets and energy supply considerations are beyond the scope of this analysis.

C-60: The economics of mitigation strategies is not addressed in the discussion of socioeconomic effects. Mitigations are not required under the existing legal and regulatory environment and would need to be included in the ROD stipulations in order to be effective.

R-60: The proposed mitigation strategies have been screened for economic feasibility. However, an analysis of the economics of mitigation strategies is beyond the scope of this analysis.

C-61: Where is the economic analysis supporting the conclusion that the mitigation measure to reinject CBM discharge water is economically infeasible?

R-61: ReInjection in this case is understood to mean injecting produced water back into the coal seam from which it was extracted. This option to reinject coal into the same zone or aquifer was rejected on technical (not economic) grounds, as discussed in the section “Alternatives Considered But Not Analyzed in Detail.”

C-62: The socioeconomic analysis in Chapter 4 states that negative impacts could occur to irrigation from Alternative C, but none of the impacts are quantified. This section goes on to confuse the issue by contradicting the hydrological section. In Alternative E, the Preferred Alternative, the socioeconomic analysis states that this is the “most protective of water resources,” which is counter to the conclusions from the hydrology section.

R-62: The statement in Chapter 4, Alternative E, under Attitudes, Beliefs, Lifestyles, and Values, it states, “Alternative E would be the most protective of water resources and water resources values of all the alternatives being considered” was changed. It now reads: “Alternative E would have impacts on water resources and water resource values that are between the impacts of Alternative B and Alternative C (see Hydrological Resources section).” An estimate of the qualitative economic impacts on water resources is provided for each of the alternatives, allowing them to be compared on this basis. However, a quantitative analysis is beyond the scope of this document.

C-63: Chapter 3 states, “The taxes and royalties assessed on oil and gas development and production are an important source of revenue for local governments and the State.” A sentence should be added regarding oil and gas production taxes distributed to the counties so that the chart can be inserted or can be referenced in the Appendix. The chart has quarterly distributions, but a table of calendar year totals would likely be sufficient and more clear. The text should state: “A percent of state-

levied oil and gas production taxes are distributed to the counties based on the county where production occurred. For natural gas, 86 percent of the production taxes are distributed to the counties for local governments and schools. For oil, 60.7 percent of the production taxes are distributed to the counties.”

R-63: In Chapter 3, under the State Oil and Gas Lease Income section, the recommended sentences were added after the sentence that ends, “...and local property taxes on drilling and production equipment” and before the sentence that begins, “See the Socioeconomics Appendix.”

C-64: An additional table of the oil and gas production tax distribution to the counties would be relevant in this section.

R-64: While this additional information would be relevant, as the comment suggests, it would not add substantial new information relative to the analysis and comparison of alternatives.

C-65: Citing responses that “are likely to be biased” is not productive.

R-65: The information from the newspaper opinion survey, along with the caveat that the responses may be biased toward those persons who were concerned about CBM, was provided in the interests of summarizing available information on public opinions.

C-66: Income levels in Gallatin and Yellowstone counties, where a very small portion of foreseeable development is likely, are considerably higher than in other counties included in the planning area. If the per capita average were calculated without these two counties, the statistics and analysis would be far more accurate and useful.

R-66: The document provides the per capita income information suggested in the comment. The Social and Economic Values section of Chapter 3 shows per capita income for each of the project area counties and illustrates the differences among the counties.

C-67: In the Chapter 3, Social Organization section, if the EIS cannot attribute it to other cause, remove the word “possibly” or amend this statement to: “This trend is highly indicative of a poor economic climate.”

R-67: The two statements concerning economic climate in relation to housing supply are beyond the scope of this analysis and were removed.

C-68: In Chapter 3, how many public scoping comments were received? Please include an additional table in the EIS showing this breakdown.

R-68: There were 311 scoping letters received with a total of 2,100 comments as part of the scoping process. A summary of the process and the letters is provided in the Final Public Comment Summary and Recommendations (March 20, 2001) document. This document is available on the CBM portion of the Montana Department of Environmental Quality web site, <http://www.deq.state.mt.us/coalbedmethane>.

C-69: Page SEA-1–Scoping (DEIS) is the process used to identify the issues to be addressed by the EIS. It is not a comment process. Moreover, the agencies repeatedly stressed that very point prior to and during the scoping process. It is outside the bounds of NEPA and MEPA for scoping submittals to be used as anything other than what is intended or to be used as a bona fide survey of attitudes. Therefore, scoping submittals should not be considered comments.

R-69: The document is correct that the purpose of the public scoping process is to receive input on the issues to be addressed in the EIS and to help shape the study. The comments also provide information on attitudes and values associated with a proposed project. The summary on p. SEA-1 was prepared in this light and not in the context of scoping the study.

C-70: Taken from Chapter 3, “The percentage of royalties disbursed in Montana is much greater than the national average.” This statement should be corrected to advise the reader that, under current federal legislation, Montana receives 50 percent of the net receipts on lease bonuses and rents and the applicable royalty revenue. Table 3-27 of the DEIS should be updated to reflect fiscal year 2001 information.

R-70: The text was revised to reflect this comment. The sentence in Chapter 3, Socioeconomics, reads, “The percentage of royalties disbursed in Montana is much greater than the national average” will be revised to read: “federal legislation provides that Montana shall receive 50 percent of the net receipts of all bonuses, rents and royalties collected on BLM-administered lands within Montana. As a result, the percentage of royalties disbursed in Montana is much greater than the national average.”

C-71: Why is Stillwater County not part of more discussion in the EIS?

R-71: Stillwater County is discussed throughout the socioeconomics analysis in Chapter 3, Chapter 4, and the Socioeconomics Appendix, as relevant.

C-72: It appears that there are overstatements related to the number of wells, sales price and the longevity of the production cycle of CBM development in

Montana. The EIS needs to present supporting documentation for these assertions.

R-72: Assumptions regarding the number of wells are discussed and documented in the RFD scenario document for the purpose of focusing the analysis of the EIS. Further information on the assumptions regarding the production life of the wells is provided on the responses to comments on the Hydrological Resources section of the document.

C-73: The economic analysis currently presented in the EIS is no more than an estimate of revenue from CBM.

R-73: This comment is incorrect. The socioeconomic analysis discusses economic costs and benefits from CBM development in accordance with the goals of this document (disclosure of potential impacts of alternatives), the level of detail, and the availability and appropriateness of quantitative and qualitative information.

C-74: Regarding Chapter 4, won’t the zoning requirements of a community supersede the mineral rights?

R-74: Zoning codes describe the allowable use for a given location or piece of property. The zoning code would generally restrict the sorts of activities related to mineral extraction that could be conducted in a given location. However, because zoning codes and allowable uses vary by jurisdiction, there is no single answer to the question.

C-75: On page SEA-1 (DEIS), the conclusion that the study area population “may feel reluctance toward short-term developments that will alter their lifestyle” appears to be biased and unfounded.

R-75: The statement referred to in the comment is one of several general statements applicable to a specific population sub-group. It is based on the information sources discussed in the subsequent pages of the Socioeconomics Appendix.

C-76: Because the unscientific poll on page SEA-2 (DEIS) was taken at a particularly busy time (early calving, intensive feeding, etc.) for those in the area most likely to be considered for development, many were likely unable to find the time to participate in a survey they had no way of knowing would later be used in this type of document.

R-76: The likelihood of limited participation in the newspaper opinion survey is already acknowledged in the document. The information from the survey, along with the caveat that it may be biased toward those persons who were concerned about CBM, was provided in the interests of summarizing available information on

public opinions in the absence of a statistically validated survey.

C-77: What is totally missing from the EIS is any analysis of the potential revenue from development.

R-77: Quantifying the revenues that would accrue to CBM developers is beyond the scope of this document and is not relevant to the analysis of alternatives. However, the indirect effects of this revenue—wages paid to workers, purchase of supplies and equipment, payment of taxes—are included in the analysis.

C-78: Why is the Anderson ZurMuehlen study not included in its entirety in the EIS? Proposed CBM development activities would generate \$4.1 billion in benefits but would be virtually costless. Is that a correct summary of the ZurMuehlen study results?

R-78: The Anderson ZurMuehlen study (ZurMuehlen, A. 2001) was used in this analysis as a source of information to estimate the number and types of jobs that could result from CBM development. However, the study and its conclusions were not otherwise used as a basis for the socioeconomics analysis in the EIS, in part because the study focuses on the revenues from CBM and not the economic impacts that are important to the EIS.

C-79: Why are there no alternative scenarios estimating the socioeconomic impacts under different assumptions for key variables (e.g., gas price and number of in-migrating people)?

R-79: The same assumptions regarding gas prices and number of in-migrants were used for all of the alternatives analyzed. These assumptions are considered reasonable for the purposes of this analysis. While the actual numbers could be different than the assumptions, the differences would not change the relative impacts of the CBM management alternatives under consideration.

C-80: Missing data includes capital and operating costs and profitability of currently operating wells and fields in all different parts of the Powder River Basin, capital and operating costs and profitability of new wells and fields, including the costs of different water production and disposal options, and profitability estimates of CBM ventures.

R-80: While a CBM producer's capital and operating costs are important to the overall economic success of CBM development, these costs are not relevant to the analysis of socioeconomic impacts on the communities in the analysis area with respect to the CBM alternatives being considered.

C-81: How much money would the project generate that could be provided for more effective remediation?

R-81: Mitigation measures are developed to offset impacts and can be financed in a number of ways. There is not a direct relationship between potential CBM revenues and the funds available to pay for mitigation measures.

C-82: Table 3-19 of the DEIS does not identify current or recent oil and gas employment in the state or the affected communities. Why not? The U.S. Census Bureau report contained statewide oil and gas employment from 1969 to 2000 for oil and gas extraction. Why doesn't the EIS have at least that amount of information?

R-82: The data provided in the table showing employment trends by sector was the best available at the time the EIS was produced. While potentially interesting, the additional statewide employment information cited in the comment would not provide substantial additional information with which to evaluate the alternatives.

C-83: What proportion of the gas and bonus revenues shown in Table 3-27 of the DEIS were derived from CBM development?

R-83: The requested information is not readily available. However, because there is relatively little CBM development currently in the emphasis area, relatively little of the gas or bonus income would be due to CBM.

C-84: Why does the Montana EIS assume that the average life of a Powder River Basin CBM well would be 20 years, but the WY EIS assumes that an analogous well in WY would only last 5 to 7 years? This assumption is a very large positive boost to total revenues and profitability of Montana's potential CBM production.

R-84: The comment is correct that the total revenues expected from a given well correspond to assumptions about the life of the well and that different well life assumptions are used in the Montana and Wyoming documents. The reasons for the differences relate primarily to a number of site-specific assumptions that vary by location. Further information on the assumptions regarding the production life of the wells has been added to Chapter 4, Assumption Rationale, CBM Well Production Life.

C-85: Why doesn't the Montana EIS economic analysis examine the higher royalties that are typically paid to private landowners within the Powder River Basin? Royalties as high as 20 percent are used in EPA economic analysis for private Wyoming landowners.

R-85: Private landowner royalties from mineral rights are summarized in the discussion of county per capita income. As discussed in Chapter 4, Attitudes, Beliefs, Lifestyles, and Values, Personal Income of the EIS, private landowner income accruing to an individual could be substantial but the effect of this income on per capita income in the CBM emphasis area or the state would be small. As a result, individual private landowner royalties are not quantified.

C-86: Why does the Socioeconomics Appendix end so abruptly and without a conclusion?

R-86: The Socioeconomics Appendix contains detailed information to support the background information provided in the socioeconomics section of Chapter 3. Interpretation of this information is incorporated into the analyses in Chapter 3 and Chapter 4. The appendix is not a stand-alone document.

C-87: Why doesn't the EIS investigate the costs of downhole separation of gas and water?

R-87: Downhole separation of gas and water for CBM is not a common practice due to technical limitations and is not currently used for CBM development anywhere in the United States. For this reason and because this issue was not brought up during project scoping, it is not analyzed in the EIS.

C-88: The EIS needs to address disproportionate impacts that may affect populations in certain parts of the planning area such as Rosebud County, Powder River County, the Amish community, and any low income populations.

R-88: As discussed in Chapter 3, Low-Income and Minority Populations, of the EIS, potential impacts on populations were identified at the county level, in accordance with the scope of this study. The potential for disproportionate impacts on populations in Big Horn, Powder River, and Rosebud Counties is acknowledged in a number of places in the analysis (e.g., p. 4-80). More detailed analysis of such impacts is beyond the scope of this study.

C-89: The EIS should analyze the burdens, direct and indirect—economic, social, cultural, environmental or health—that would come from the proposed action.

R-89: These impacts are analyzed and discussed in the socioeconomics sections of this document.

C-90: Why does the EIS not address the potential long-term economic loss of fish and wildlife

recreational activities from lowered species populations?

R-90: The FEIS addresses this potential economic loss in Chapter 4 in the Social and Economic Values section.

C-91: The EIS makes no mention of the potential impacts that full-scale development could have on small rural volunteer fire districts.

R-91: Along with the increased risk of wildfire comes an increased demand on local fire departments and federal and state fire fighting organizations. These impacts are discussed in the Social and Economic Values section of Chapter 4.

C-92: What will the economy of Eastern Montana look like after the CBM is gone?

R-92: The comment appears to refer to the potential for boom and bust. See **C-20** and **R-20**.

C-93: There needs to be a discussion of the economic feasibility of water treatment.

R-93: The various water treatment alternatives described in Chapter 2 (Alternatives) and in the Hydrological Resources section of Chapter 4 are integral parts of the alternatives. The treatment options will be the responsibility of the CBM developers. While the treatment options were screened for feasibility as part of developing the alternatives, the economic feasibility (e.g., costs to CBM developers or operators) is beyond the scope of the assessment of economic impacts of CBM on the affected communities.

C-94: I'm opposed to mining of CBM, because when I asked people who worked in CBM production they said they had certain effects from it, and you're talking about 20 years from now.

R-94: Human health was not identified as an issue during the scoping process. However, it is addressed in the Environmental Justice sub-section of Chapter 4 (contained in the Social and Economic Values section). Companies have a responsibility to inform their employees and others affected by their operations about safety and health issues and procedures.

C-95: The character of the demographics as it goes on 5, 10, 15, 20 years in the future and beyond is just inadequately addressed.

R-95: As described on p. 4-75 of the DEIS, the time period for analysis for socio-economic impacts is 20 years, based on the average production life of a CBM well. Although impacts beyond this time are not quantified, the discussion on that page acknowledges that such impacts could occur.

C-96: I want more in-depth study as to what kind of impact it's going to have on not only this generation, but for seven generations from now, and even longer.

R-96: See previous comment and response.

C-97: What about the tribal report on those aspects of the reservation's physical, social and cultural environment which will likely be affected by CBM development?

R-97: The FEIS incorporates socioeconomics information from the recent Crow and Northern Cheyenne tribal reports (see Chapter 3).

C-98: The impacts and mitigation analysis do not address the social, economic and cultural impacts on the Northern Cheyenne Tribe in any fashion that is responsible and meaningful. There is no mention of impact on springs, no talk of water supply issues, no social or economic implications, no real mitigation strategies or ideas.

R-98: The socioeconomics section of Chapter 4 discusses impacts at the county level, based on the assumed locations of CBM wells in the future. Because specific CBM well locations have not been identified, it is beyond the scope of this EIS to identify or quantify impacts more specifically. Site-specific evaluations to be conducted as part of the drilling permit process would be used to quantify changes associated with specific locations.

C-99: I would also ask that they reinject the water, because not doing so affects everyone else in the neighborhood. I would also ask, if you own your mineral rights and you don't want to develop them, a buffer zone is set so that your minerals or your water cannot be taken that you can some day have a claim on.

R-99: Injecting produced water back into the coal seam from which it was extracted was rejected, as discussed in the section Alternatives Considered But Not Analyzed in Detail. Assumptions and impacts related to below-ground resources are discussed in the Hydrological Resources section of Chapter 4.

C-100: CBM development will increase the tax base, but when the gas is gone the jobs will be gone, when the jobs are gone the tax base will be gone, and so will be the oil companies. We'll be left with a deteriorating infrastructure and mortgages to pay and no money to pay them with.

R-100: See **R-20**.

C-101: The EIS talks about the jobs and the taxes and all that, but what it doesn't talk about is what's going to happen to the economy after CBM is gone.

R-101: See **R-20**.

C-102: It looks like we've got an assumption there that that is not currently viable since you say when it becomes viable or when and if. I wonder what data you used to make that assumption, if there's been an economic study done.

R-102: Existing economic conditions and potential economic impacts are discussed in the socioeconomics sections of Chapter 3 and Chapter 4, respectively.

C-103: I don't think the EIS is complete until we have an economic analysis of all sorts of different water options.

R-103: See **R-22**.

C-104: Anderson ZerMuehlen study came out and had lots of benefits for CBM development, but it was unable to find any costs associated with that development.

R-104: See **R-78**.

C-105: There is no discussion in the EIS on the cumulative socioeconomic impacts of methane development in Wyoming.

R-105: See **R-48**.

C-106: A tax change occurred in 1999 that went into effect in 2000 and eliminated local government severance taxes. The EIS should include a more accurate classification of oil and gas production taxes that are returned to the counties.

R-106: This tax change does not affect the conclusions or general presentation of data. However, the change was noted. The following sentence was added to the end of the second paragraph under Natural Resource Taxes: "(Note: The Oil and Gas Production Tax was eliminated after 1999.)"

C-107: We anticipate that CBM development will severely impact the quality of our ranch's current operations, as well as our long-term investment.

R-107: See **R-1**.

C-108: There is no accountability to state or federal agencies or to the methane industry for the impacts that they will cause agriculture.

R-108: Impacts on agriculture could occur as a result of changes to soils and water, as discussed in the relevant subsections of Chapter 4. CBM activities will not

proceed without the approval of the EIS and compliance with applicable state and federal laws.

C-109: In Table SEA-2 of the DEIS, you can see that those counties with mineral production, because it's a non-mill-levy revenue source, have the lowest mill levy. So in the section on taxes, if there could be mention that the oil and gas or mineral production taxes offset the property taxes that are needed to support the county, and therefore there is a mill-levy reduction that everyone in the county experiences when there's oil and gas or mineral production in that county.

R-109: This information was added to Chapter 3 of the FEIS. Prior to the sentence, "See the Socioeconomics Appendix for more information on taxes," the following sentence was added: "Generally, as county oil and gas production tax revenues increase (e.g., because of new oil and gas production), the property tax rate (mill levy) for the county is decreased accordingly."

C-110: The impacts on the local area that weren't addressed in the EIS, and those are farmers, ranchers' dollars that come to town, primarily Miles City, Custer County, was totally missed by the EIS.

R-110: See next comment and response.

C-111: Miles City is going to be impacted, at least in my viewpoint, and so I'm just really disappointed that our own BLM office didn't see fit—there's even a BLM office there, and they didn't even see fit to hold a hearing in Miles City.

R-111: Miles City is located in Custer County. Custer County is one of the counties included in the socioeconomic analysis. The socioeconomic analysis was conducted at the county level, in keeping with the level of the EIS and the fact that specific CBM well locations have not been identified. Site-specific evaluations to be conducted as part of the drilling permit process would be used to quantify changes associated with specific locations.

C-112: You haven't addressed impacts in Miles City.

R-112: See previous comment and response.

C-113: There are no legally required buffer distances between CBM facilities and residential, community or government dwellings. Placements of roads and well pads near residential businesses and community dwellings may cause direct reduction of property values.

R-113: See *R-1*.

C-114: I would suggest that, within the Socioeconomic Appendix, it references a series of articles that were done by the *Billings Gazette* and also talks about peoples' attitudes, Montanans' attitudes about this development, and they reference a point-and-click poll that was on an internet website that the document itself admits was not scientific. That said, if you do want a poll to reference Montana's attitudes, there was a scientific poll conducted by MSU Billings.

R-114: The information from the MSU Billings poll was incorporated into the Socioeconomics Appendix (see *R-19*).

C-115: How will we attract tourists, clean, high-tech and white-collar industries and business into Montana if we allow our cherished landscapes to be sacrificed to the short-term profits of the CBM industry? Why has this seminal issue not been addressed in the EIS?

R-115: The mitigation measures described in Chapter 2 are intended to minimize impacts on the environment, including the landscape. The attraction of other business and industry to the area would depend on a number of factors including labor force, economic climate, and availability of markets.

C-116: Drug and alcohol use is increasing, which will lead to an increase in motor vehicle accidents. Are you going to fix the roads?

R-116: The construction and maintenance of roads and other utilities would be funded by the users. The decision as to whether to maintain roads upon abandonment of CBM facilities will be up to the land owner, which could be either a public or private entity. See further discussion in the Lands and Realty section of Chapter 4.

C-117: And there's going to be people coming in—strangers—and they're going to be bringing in drugs, there's going to be rape, and there's going to be unwanted pregnancies again.

R-117: The potential for population influx associated with the various alternatives is discussed in the Social and Economic Values section of Chapter 4. Because of the geographic scale of the CBM development scenario, it is infeasible to quantitatively assess the relationship of the project to specific public services. However, increases in the demand for such services are anticipated to be within the capacity of the providers.

C-118: A separate Economic Impact Study should be conducted, much like the one commissioned by the Durango, Colorado, County Commissioners' Office (2).

R-118: The social and economic values section of Chapter 4 discusses potential economic impacts of the

project on the surrounding communities, in keeping with the purpose, scope, and requirements of an EIS.

C-119: If water quality for irrigation could be degraded by large-scale CBM production, perhaps some method of compensating people not to irrigate would benefit ranchers, fisheries, and CBM producers.

R-119: Mitigation measures, including compensation where relevant, are discussed in Chapter 2. A Water Management Plan, which would prevent and/or address water degradation, would be required for the Preferred Alternative.

C-120: The EIS does not include the impact of CBM production on property values and the impact of CBM production on the local economy and the potential decrease in tourism.

R-120: Potential effects on property values and the regional economy are discussed generally in the EIS. See **R-1** and **R-29** for further discussion.

C-121: CBM development needs to be distanced from residences by adequate protective buffer zones of greater than 200 feet. This should include all aspects of CBM development, including roads, pipelines, and drilling facilities.

R-121: CBM development under the Preferred Alternative (see Chapter 2) would require an approved project plan when well densities are greater than 1 well per 640 acres. The project plan would address potential landowner impacts.

C-122: The EIS must address potential alternatives to mitigate the losses that property owners will have if CBM development takes place.

R-122: CBM development under the Preferred Alternative (see Chapter 2) would require an approved project plan that would address potential landowner impacts.

C-123: Landowners should be compensated for overhead powerlines and roads on a per foot rate per year.

R-123: CBM development under the Preferred Alternative (see Chapter 2) would require an approved Project Plan that would address potential landowner impacts.

C-124: Do the population estimates presented in Table 3-15 of the DEIS assume large-scale development of Powder River Basin CBM, or are they assumptions based on little or no additional CBM-based development?

R-124: The numbers provided in this table are from the Montana Department of Commerce, Census and Economic Information Center. Chapter 3 does not assess the potential impacts from CBM development and therefore these numbers do not nor should not assume CBM development.

Environmental Justice

Comments and Responses

Comment 1 (C-1): It is acknowledged in the document that 45 percent of the populations in the three counties that will be the focus of development are Native American; yet more than 90 percent of the population in the 16-county region is of European descent. Thus, Native Americans will incur a large and disproportionate percentage of the negative impacts; at the same time, Euro-Americans will enjoy the vast majority of the economic benefits.

Response 1 (R-1): Although 45 percent of the population in the Big Horn, Rosebud, and Powder River counties are Native American, the majority of these individuals also reside on the reservations where no CBM development is planned by the BLM or state. If the reservations are to be developed, this will be a decision of each respective tribe. Off-reservation development and impacts on the reservation is dependent upon site-specific conditions and the extent of development in proximity to the reservations, which will dictate the degree of impacts on a reservation and/or the people living there. These potential affects will be analyzed in subsequent site-specific analyses.

C-2: The range of alternatives considered does not include any geographic limitations on CBM development that might lessen impacts upon Native Americans.

R-2: Alternatives B and D addressed the implementation of a 2-mile buffer zone around the reservations for federally managed minerals. See Chapter 2, Indian Trust Resources.

C-3: Alternative E (Preferred Alternative) rejects a number of measures that could lessen the environmental impact upon the tribal communities. Most of those measures have to do with potential impacts upon surface water and groundwater.

R-3: Alternative E requires operators to develop a Water Management Plan to protect surface water from discharges and to ensure that there is no undue degradation to watersheds. In the case of the Northern Cheyenne, once the Tribe's draft water quality criteria are finalized these numbers would be applicable and used to develop Water Management Plans in the Tongue

CHAPTER 5

Social and Economic Values

River and Rosebud Creek watersheds upstream of the reservation. See the Alternative E—Preferred Alternative discussion in Chapter 2.

C-4: Does the environmental justice issue somehow disappear if the non-replacement areas are not adjacent to a reservation?

R-4: The environmental justice issue is a Federal Action issued under Executive Order No. 12898 (February 11, 1994) and pertains to the disproportionate effects of federal actions on minority and low-income populations regardless of location or proximity to a reservation.

C-5: Where do we find the actual mitigation requirements for the Environmental Justice section?

R-5: The mitigation measures are discussed independently depending on the particular resource area being impacted or discussed under Environmental Justice. For example, the potential drawdown of groundwater resources from a reservation may constitute an environmental justice issue and is discussed under the Environmental Justice section, but the detailed mitigation measures for groundwater impacts are addressed under the Hydrology section in Chapter 4.

C-6: Environmental Justice should identify interest of the Crow Tribe and Crow Reservation as a planning issue.

R-6: The interests of the Crow Tribe and Reservation are addressed in the Environmental Justice section of Chapter 4.

C-7: The groundwater impact discussion in the Environmental Justice section should consider impacts on the Crow Tribes' ability to market their water as a commodity.

R-7: See new text under Environmental Justice for the Crow Tribes' water marketing.

C-8: Which number of wells in Wyoming—51,000 or 6,000—is used for the analysis in Alternative A?

R-8: The analysis in Alternative A utilized the latest Wyoming RFD estimates for well completion over the next 10 years, 51,000 wells.

C-9: How will issues of Environmental Justice be addressed subsequent to this issuance of a final ROD? What processes does State DEQ/BLM have in place to deal with Environmental Justice issues?

R-9: After completion of the ROD, the BLM will address Environmental Justice issues during the environmental analysis of specific proposals and subsequent mitigation measures included with approved permits. The state does not have an environmental justice responsibility; it is only a federal responsibility as defined in Executive Order 12898.

Soils

Comments and Responses

Comment 1 (C-1): Farming and ranching will be impacted by the effects of salinity in the water. The EIS does not address the long-term effects of land recovery and salt accumulation. Increased salinity of water will have negative consequences on native plants as well as cultivated agricultural crops.

Response 1 (R-1): Potential impacts on soils from the discharge of high saline CBM water are discussed in the Soils Appendix. Additional detailed discussions are included in the Soils Technical Report (ALL 2001a). Specifics concerning the disposition of CBM water with respect to soil impacts will depend on the quality of the CBM water, the types of soils present, and the intended use or disposal of the CBM water. Impacts on soils and other resources from the discharge of CBM produced water will be evaluated when proposals are made, along with appropriate mitigation measures.

C-2: Drainage and permeability are not synonymous. Assumptions used in the EIS that include use of soil amendments and high irrigation application rates do not address the quality of the leachate and the receiving water, which may exceed Montana's water quality standards, if applied. No evaluation is made of the impact of precipitation to create an imbalance in the ionic balance in the soil. Such an imbalance may further the development of sodic soil crusts.

R-2: As stated in the Soils Appendix, soils that exhibit good internal drainage would have a higher permeability than soils that do not exhibit good internal drainage. The use of soil amendments and high irrigation rates are a means to mitigate the effects of the SAR and salinity levels in CBM water if used for irrigation purposes. Water exceeding the Montana water quality standards may or may not be useable for irrigation depending on treatment and permit requirements. The development of sodic crusts will depend on the types of soil present, the quality of the water applied to the soils, the rate of application, and the overall quantity of water applied.

C-3: What are the mitigation details for negative impacts for soils and plants? If this water is discharged untreated, or applied operationally to the land, it will permanently change the soils. At best, it will require the perpetual application of this water and, at worst, it will render the soils unfit for any use.

R-3: Mitigation measures for soils and plants are discussed in Chapter 4 under the headings Soils and Vegetation. Under Alternative E (Preferred Alternative), a Project Plan and Water Management Plan would be required that would outline specific elements and mitigation measures based on site-specific conditions such as the quality of the CBM water, types of soils present, and the potential for impacts on plants and wildlife.

C-4: Will containment ponds or impoundments be sealed in sandy soils? What is the likelihood that impoundments will be reclaimed? How long after these impoundments are abandoned will it take for the salts to leach up to the surface when it rains?

R-4: Both BLM and MBOGC have regulations that detail how impoundments should be constructed and whether or not they should be lined. Whether or not a particular impoundment is reclaimed will depend on the surface agreement established between the landowner and the CBM operator. Some landowners may request that the impoundment not be reclaimed to allow for livestock watering. The leaching of salts to the surface after a rainfall should not occur if the impoundment is lined or if it is properly restored and reclaimed.

C-5: What are the impacts on soil resulting from the application of CBM water as it relates to SAR and EC? There is a lack of clearly defined and defended criteria for SAR and EC. The EIS indicates that SAR values less than 3 are not considered a threat to crops and native plants. The source of these criteria should be cited. Please explain how high-SAR water applied to roads and work pads will affect the reclamation of the roads and well pads at the end of a project.

R-5: The impacts on soils from the application of CBM water as it relates to SAR and EC are discussed in Chapter 4, Soils. A more detailed discussion of these impacts is included in the Soils Technical Report (ALL 2001a). Specific criteria for SAR and EC would depend on site-specific conditions such as water quality and soil type. The source of the statement describing the SAR value of 3 as not a threat to crops is the Soils Technical Report (ALL 2001a). Under Alternative E (Preferred Alternative), the reclamation of roads and well pads will be outlined in the Project Plan. Soils impacted by high SAR may require removal and replacement with stockpiled topsoil or the application of amendments to restore the soil.

C-6: The DEIS is incomplete in addressing the effects of soil erosion and salinization on the well-being of wildlife, aquatic life, and agriculture. How can the DEIS be considered complete when it lacks the soils study that

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Soils

it states in the preface of the DEIS is being conducted with the BLM Wyoming office?

R-6: Potential impacts from soil erosion and salinization are discussed under their respective headings in Chapter 4. Additional details are provided in the Soils Technical Report (ALL 2001a) and the Water Technical Report (ALL 2001b). Under Alternative E (Preferred Alternative) site-specific proposals outlined in the Project Plan would have with appropriate mitigation measures. NEPA instructs us to use the best available data. New information from studies are incorporated into the land use plan when it becomes available. A number of studies are currently ongoing or planned to provide additional information that will allow for the better management of area resources with respect to all uses, not just CBM development.

C-7: CBM development in Wyoming has created jobs for hydrologists, engineers, water resources managers, wildlife consultants, fish-stocking consultants, and others whose full-time occupations involve finding uses for water, protecting lands from erosion, and mitigating disturbances from water production. Developers and regulatory officials have learned how to successfully manage water. For example, nearly all CBM water is discharged through energy dissipation systems that prevent erosion at the outfall or discharge point. Erosion is rarely a problem.

Of course, all water moving through a stream channel will contribute to movement of sediments. Powder River is little more than a large natural sediment-moving system, affected much more by weather than by man. Increased flows in a more stable stream channel like the Tongue River will not create erosion problems. Steady flows in intermittent and ephemeral channels will move less sediment than flash floods and sudden snow melts, the natural events which cause heavy erosion in many places. Appropriate stipulations in discharge permits will minimize erosion. Accordingly, it is not appropriate to repeatedly state in the EIS that CBM development will cause extensive erosion.

R-7: The unregulated discharge of CBM produced water would result in the erosion of area soils and resulting increased sedimentation of area streams and rivers. The evaluation of erosion potential and the implementation of mitigation measures, as outlined within a site-specific Project Plan under Alternative E (Preferred Alternative), would allow for the proper management of CBM water and the implementation of erosion control measures as stated in the comment.

C-8: What effect will the increased water have on erosion of soils and stream banks? Steep hills are easily eroded and some areas are not suitable for roads or containment ponds. Erosion can increase the TDS level of streams. How will this affect the EC and SAR of the streams? The EIS states that BMPs and design construction will be used to control erosion and sedimentation, but the EIS does not identify the effectiveness of such BMPs.

R-8: The impacts on soils from erosion are discussed in Chapter 4, Soil and in the Soils Appendix with additional detail provided in the Soils Technical Report (ALL 2001a). Under Alternative E (Preferred Alternative), a Project Plan would be developed which would include and evaluation of the potential for erosion and the implementation of appropriate mitigation measures that could include engineered structures and BMPs which are well established for erosion control. The construction of roads or other structures on steep slopes would be avoided to mitigate the potential for erosion. Increased erosion would not increase the TDS level in streams. It could increase the total suspended solids levels in streams. This would not be expected to have any effect on the EC or SAR level in the stream water.

C-9: What will be done to remediate impacted soils and what is the timeframe for implementing remediation or restoration measures? How much will remediation cost, and will companies be required to post a reclamation bond to cover the costs of third-party cleanup and reclamation of soils and impoundments? Would the amount of the bond be enough to cover the removal and disposal of sodium-affected soil under the impoundments as well as other reclamation costs? Who is going to be responsible for the implementation of site restoration measures and who is responsible for monitoring site restoration activities?

R-9: The potential impact on soils and mitigation measures are discussed in Chapter 4, Soils. Remediation measures, methods, and timeframes will be dictated by site-specific conditions and, under Alternative E—Preferred Alternative, would be outlined in the Project Plan. Impacted soils could either remain in place and be remediated or be excavated and disposed of in accordance with applicable regulations.

Surface agreements also would be required to specify which areas and structures would be restored and which would remain in place. Surface impoundments, roads, and site structures would either be restored or left in place according to the surface agreement between the CBM operator and the landowner.

Water mitigation agreements would be required where water resource supplies are impacted. Bonds for well

abandonment and site restoration would be required. The actual cost of site restoration and required level of bonding would be determined on a case-by-case basis. The CBM operator will be responsible for implementing site restoration activities. Monitoring of impacts and site restoration activities would be carried out by the BLM and MBOGC or other agency as appropriate.

C-10: Monitoring requirements should include monitoring of soils in irrigated farmland and riparian areas. Levels need to be set for acceptable salt content and plans adopted for dealing with increased levels of salts in soils. Monitoring should also include produced water effluent and stream water.

R-10: Monitoring requirements are outlined in the Monitoring Appendix. Under Alternative E (Preferred Alternative), a Project Plan would be required that could include additional monitoring requirements based on site-specific conditions.

C-11: The harmful effects of dust and soil pollution from facility and road construction and the increase in traffic associated with this type of activity must be addressed.

R-11: The impacts, as well as mitigation measures, of dust from site activities such as facility construction, road construction, and road use are discussed in Chapter 4, Soils.

C-12: The EIS fails to adequately assess the affects of the disturbance of topsoil and the affect on microorganisms such as fungi and algae.

R-12: The potential for impacts on soils and mitigation measures to protect site soils, including topsoil, are discussed in Chapter 4, Soils. Mitigation measures that would be implemented to protect site soils from impacts would inherently protect the microorganisms in those soils.

C-13: The DEIS lacks a basic introductory overview of SAR and EC soil and water chemistry principles and the effect of sodium adsorption on soil structure and infiltration. An explanation of the Hanson curve and what it means to be above the line and below the line need to be included. What are the indirect impacts of decreases in soil productivity on farming and ranching viability, on riparian vegetation, wildlife habitat, and on wildlife populations?

R-13: Detailed discussions of SAR and EC soil and water chemistry principles and the effect of sodium adsorption on soil structure and infiltration are included in the Soils Technical Report (ALL 2001a), the Water Technical Report (ALL 2001b), the SWQATR (ALL, 2002) and in the Hydrology section of Chapter 4. Impacts on area resources are included in Chapter 4, Livestock and Grazing (for ranching), Soils (for farming), Vegetation (for riparian vegetation), and Wildlife (for wildlife habitat and populations).

C-14: What studies have been done to determine the soil conveyance loss? Are different types of soil taken into consideration? What effect does surface gradient have on infiltration? If this water is infiltrating the ground, what is keeping it out of the ground water aquifers that feed the rivers? Would putting high SAR and EC water into surface aquifers be illegal? Explain how water infiltrates frozen ground and how the water will infiltrate the soil when it becomes saturated. Please explain how the water will infiltrate after the soil structure has collapsed as a result of the salt water.

R-14: The conveyance loss used in the FEIS was based on data from Wyoming CBM sites and the CX Ranch field in Montana. Different soil types were not taken into consideration. Parameters relating to water infiltration rates are discussed in the Soils Technical Report (ALL 2001a) and Water Technical Report (ALL 2001b). Utilizing CBM water to recharge surficial aquifers would be assessed on a case-by-case basis and would require the approval of the appropriate agencies.

C-15: Where is the baseline study of the soils along the Yellowstone River below the Powder River?

R-15: The study is being conducted in conjunction with the BLM Wyoming office and will be available in the spring of 2003.

C-16: Why did the agencies fail to respond to issues listed under "Soils" in Chapter 1?

R-16: These issues are addressed in Chapter 4 in the Soils section, in the Soils Appendix, and in the Soils Technical Report (ALL 2001a).

Solid and Hazardous Waste

Comments and Responses

Comment 1 (C-1): Will the landowner be notified that he is responsible for all hazardous materials placed upon the land? Can a landowner deny access to his property of any “hazardous substances” since the landowner is liable?

Response 1 (R-1): Under CERCLA regulations, landowners are responsible for waste generated on their property. However, under the Montana Code Annotated (1999), Title 82, Chapter 10, Part 505 states “The oil and gas developer or operator is responsible for all damages to property, real or personal, resulting from the lack of ordinary care by the oil and gas developer or operator. The oil and gas developer or operator is responsible for damages to property, real or personal, caused by drilling operations and production.” This statement places the liability of cleanup that results from spills or unused non-exempt waste (paint, acid or other chemicals) to the oil and gas developer and operator.

C-2: What will be done to protect landowners from damage to their land and water by the spilling of waste during maintenance or construction activities?

R-2: See **R-1**.

C-3: We don’t want herbicides or pesticides used on our property. What alternatives will the CBM companies use?

R-3: Landowners who do not wish to have pesticides or herbicides used on their property should include such information in their surface use agreements. The landowner and CBM operator can agree to other methods (e.g. the construction of a vehicle wash station) for controlling the spread of noxious weeds.

C-4: The EIS needs to more fully analyze specific impacts on Big Horn County related to solid waste.

R-4: The FEIS is designed to address issues related to CBM development across the entire State. Issues related to site-specific concerns are to be addressed in Plans of Development, and general impacts from solid wastes are found in Chapter 4. Water Management Plans and development EAs.

C-5: Analysis of Alternative E, the Preferred Alternative, will have impacts similar to Alternative B. The EIS indicates that under Alternative B, “The increased volume of solid and hazardous wastes would result in local landfills reaching capacity sooner.” The Hardin landfill has a remaining life expectancy of approximately 25 years, and is unlikely to last through CBM development with projected effects of any alternative except Alternative A, No Action.

R-5: If the expected remaining life of the Hardin landfill is 25 years, it is likely that any development alternative but A would shorten that life expectancy.

C-6: The EIS should consider that not all CBM wastes are disposed of directly in local landfills, and that the wastes can cause significant costs to local government and remote canister sites. The EIS should identify measures to ensure prevention and monitoring procedures and the enforcement of existing state and federal regulations. It should also include ways to mitigate increased costs to local government and the need for new or expanded landfill facilities.

R-6: The FEIS states in Chapter 4, Solid and Hazardous Waste, Assumptions, “All wastes generated by oil and gas including CBM ... would be disposed of in accordance with regulations.” In addition, in Chapter 2 of the FEIS under Management Common to All Alternatives, there is discussion of what agencies are responsible for monitoring and enforcement activities.

Because of the short life and shallow depth of most CBM wells, there will not be as much solid wastes produced as is typical during conventional oil drilling activities. Also, CBM drilling does not use materials considered hazardous while drilling. No special disposal costs would be associated with the drilling. If any hazardous materials were on a CBM site, they would be the responsibility of the company to remove and dispose of in a approved facility (for hazardous materials this would not be a public landfill). The operators will pay fees associated with disposal in private landfills. The operators will be taxed on their gas production; these funds will be included in public funds that may be allotted for the construction of public landfills.

Vegetation

Comments and Responses

Comment 1 (C-1): We are concerned about the liability to the state and taxpayers like ourselves who may be left with the clean-up costs after methane development is over.

Response 1 (R-1): Oil and gas, including CBM, operators are required by BLM and the State to properly reclaim disturbed areas and clean up after completion of lease activities. Both BLM and the State require operators to maintain adequate amounts of bond coverage. Termination of bond liability does not occur until after reclamation and clean up work has been completed to the satisfaction of surface owners and permitting agencies.

C-2: The EIS must include surface protection for the land, vegetation, and water resources.

R-2: Federal and state oil and gas leases include stipulations designed to protect other resources. Other protective measures are described in each of the Alternatives, including Alternative E-Preferred Alternative and Table MIN-5 in the Minerals Appendix. The permitting agencies can include requirements designed to protect resources and land uses with approved permits.

C-3: The lowered water table will increase desertification and erosion. How will a lowered water table impact native grasses and sensitive plants, and important habitat such as woody draws and naturally sub-irrigated meadows?

R-3: As stated in the EIS, shallow aquifers should be isolated from water withdrawal in lower aquifers. This would minimize impacts on surface vegetation that is dependant on the shallow water table. An evaluation of impacts will be made for individual permit applications and measures taken to avoid or minimize impacts on sensitive vegetation.

C-4: Loss of flow in springs and the drying out of natural wet meadows could cause livestock to seek out forage in existing, more permanent riparian areas, placing greater impact upon these areas.

R-4: Where possible, alternative water sources will be developed as part of operator plans and mitigation measures. CBM water will be made available for livestock, which should reduce the impact of livestock grazing in riparian areas.

C-5: The proliferation of new roads, pipelines, well sites, compressor sites, and other project-related

disturbances will result in a huge number of newly disturbed sites that will favor colonization by exotic weeds.

R-5: Operators will be required to aggressively control weeds. Chapter 4 under Vegetation in the Assumptions section states, "The BLM has co-developed an action plan for weed containment and eradication practices that will be implemented for all alternatives (BLM 1996). Pertinent sections of Appendix 3 from that document are reproduced in the Vegetation section of Chapter 4. The action plan applies to the State's list of weed species of concern (see the Vegetation Appendix)."

C-6: What will be done about weeds in the areas where produced water reservoirs exist after the CBM project is finished?

R-6: The operator will be responsible for reclamation of disturbed sites, which includes weed control.

C-7: The BLM DEIS says that lessees and landowners will be required to monitor and control weeds, but there is nothing to indicate how this requirement will be enforced, or how they will be compensated.

R-7: Each landowner is encouraged to negotiate and work with producers to establish development procedures on their property. These negotiations should address weed-control activities. Compensation must be negotiated between the landowner and the producer.

C-8: The EIS references a weed action plan. What about private surface above federal minerals?

R-8: BLM is actively involved with operating plans and weed prevention and control. BLM has the responsibility and authority in these cases and works with the landowner to make sure their interests are taken care of by the lessee or operator.

C-9: Will landowners have the right to require all vehicles totally cleaned at an off site property owned by the operator before they enter a surface owner's property?

R-9: The BLM's weed action plan requires cleaning equipment prior to moving into weed-free areas.

C-10: Reclamation of native vegetation will be difficult, especially given the probable invasion of exotic weeds that compete with and crowd out native species. Is there a mitigation plan in place?

R-10: Mitigation plans, which include re-vegetation and weed control will be developed as part of each permit to drill application.

C-11: Before development proceeds, the agencies should collect thorough plant inventories.

CHAPTER 5

Vegetation

R-11: Vegetation surveys will be conducted on federal and state lease areas before beginning operations. Information from the surveys will help determine seed mixtures used in reclamation. Plant clearance surveys will also be conducted for sensitive species before beginning operations.

C-12: From Chapter 4, will a time limit be set for reclamation of disturbed areas?

R-12: Although commencement of reclamation is variable and project specific, the reclamation bond for each project is not released until reclamation is judged successful.

C-13: The Minerals Appendix states, “The planting of grasses, forbs...must be approved by the appropriate agency.” Need to clarify that approval is needed when the “appropriate agency” is the surface owner or trustee and not when the surface is privately owned.

R-13: The EIS wording will reflect the concept that the approving agency may in fact be a private landowner on private land. However, even on private land, there are requirements to prevent the establishment and spread of noxious weeds, which may require reclamation of disturbed land.

C-14: Too much water, even of good quality, can drown plants.

R-14: The application of water for irrigation would need to be carefully monitored to ensure that plants are not over or under watered. If CBM produced waters are to be managed by land application, this use must be covered in the CBM operators Water Management Plan. These plans must be reasonable if they are to be approved.

C-15: Our native plants and most crops can’t survive with the high level of dissolved salts found in methane water.

R-15: Produced water must be tested for water quality before it can be put to a beneficial use including land applications or irrigation. Only water of suitable quality, either before or after treatment, would be available to be used in beneficial uses. Existing data shows that the quality of water produced with CBM varies and not all of it is highly saline.

C-16: It is critical that the effects of increased SAR on plant production and viability was clearly stated in the narrative. Will this be done?

R-16: Effects of high SAR water are discussed in the Vegetation and Soils sections of the EIS.

C-17: A salt-tolerant crop selection should be addressed (generally low yields, poor quality feed and forage).

R-17: Each rancher or farmer can consult with the Natural Resource Conservation Service and County Extension agents for information about site-specific conditions related to crops, water quality and soils.

C-18: What are the consequences of coal bed methane wastewater on the land and crops? How much soil will be lost?

R-18: The EIS discusses the impacts on soils and crops from CBM water in the Soils section of Chapter 4. Additional discussion can be found in the Soils Technical Report (ALL 2001a).

C-19: Although a large amount of data has been included, it is not site-specific and is inadequate in describing the affected environment. For example, there are only two sentences that refer to riparian areas and neither refers to any site-specific riparian areas. No reference is made to numerous site-specific studies of the project area.

R-19: The EIS addresses broad-scale, generalized impacts on resources. It is not possible in this document to address site-specific impacts because no specific sites have been identified. Site-specific analyses will be completed as part of the analysis for each well permit application.

C-20: There are no references to wetlands or the moist habitats surrounding natural springs and seeps, or their location. There is no discussion of how they function in the affected environment and how they would be affected by development, or where replacement wetlands would be located.

R-20: A wetland discussion has been added to the Chapter 3 Vegetation Section which, addresses wetlands in the project area. Since specific well locations have not been identified, describing impacts on specific wetlands is not possible in this document. Replacement wetland locations cannot be identified until the location and extent of specific impacts are identified. These activities (identification and mitigation) will occur at the time a 404 permit application is prepared for wetland impacts resulting from well installation or other project activities.

C-21: In Chapter 4, the EIS states that drilling sometimes may occur in or near areas that support riparian vegetation or special status plants. Roads and facilities are supposed to avoid sensitive areas to the extent practicable. Please reconcile this statement with the statement from Chapter 4, Vegetation, that existing stipulations will protect most riparian areas and certain wildlife habitats?

R-21: Sensitive areas, including riparian areas, would be avoided to the extent practicable as stated in the EIS. However, avoidance may not be possible in all cases, so some development may occur in sensitive areas. Pre-development clearance surveys and projects designed to avoid impacts will be used to minimize the effects from development in sensitive areas.

C-22: In Chapter 4, the statement that the direct impacts on riparian areas would be similar to Alternative A (250 producing wells and another 300 or so exploration wells). How can this be when Alternative B includes 18,300 wells?

R-22: During exploration and development, wetlands and riparian areas are specifically protected from direct impacts under all alternatives. Therefore, there should be little direct impact on riparian areas with any alternative. See Chapter 4-Assumptions: "Under all alternatives, most riparian areas and certain wildlife habitats (see the Wildlife section) are protected from direct impact under current stipulations on BLM land that restrict surface occupancy but not road crossings (BLM 1994)." Crossings would come under each activity (identification and mitigation) at the time a 404 Permit application is prepared for wetland impacts resulting from crossing activities.

Regarding indirect impacts, which may be what the comment is about, the writer is correct; there will be large differences between alternatives because of the use and disposal of water. Alternative C has the largest potential for impact on riparian areas because discharge of untreated water onto the surface would be allowed. Alternative D would have the next greatest impact because the same amount of water would be discharged to the surface, although it would be treated first. Alternative E would have the least impact of the action alternatives, but even Alternate A (No Action) will allow discharge to the Tongue River from the CX Ranch of up to 1,600 gallons per minute. Alternative B has implications for groundwater quality. All have implications for groundwater abundance.

C-23: In Chapter 4, the statement that direct impacts on riparian areas are similar to Alternative A. How can this be when Alternative A is no development and Alternative C allows development of 18,300 wells with discharge of CBM wastewater into intermittent streams, impoundments and directly onto the surface?

R-23: Alternative A is not "no development," but it is limited development to the CX Ranch. Direct

impacts are limited to riparian areas on all alternatives (see **R-22**).

C-24: The EIS mentions that user-created roads will result in additional loss of vegetation and increase potential spread of noxious weeds, but it offers no mitigation for this. Will landowners be compensated?

R-24: The following text has been added to Chapter 4, Vegetation: "On private lands, the landowner will negotiate with the producer before exploration and development and come to an agreement as to what measures the producer will initiate for weed control site restoration and what criteria constitutes successful site restoration and proper weed control."

C-25: The groundwater loss causes trees to slowly start drying out and dying off. This also could cause a lot of stress on the trees, which could cause an outbreak of the pine beetle attacks on the standing green timber stands that could kill thousands of acres of timber stands annually.

R-25: In general, conifers which would be attacked by pine beetles are dry land species and do not rely on groundwater for support. Groundwater below pine stands is usually very deep. This can be evaluated on a case-by-case basis as part of the project-specific analysis completed for each well permit.

C-26: Although the EIS lists Section 404 of the Clean Water Act as an agency responsibility, no description is included of wetlands or other special aquatic sites as they are defined under that law. Nor is there an analysis of the impacts from CBM development on these resources. Has the Section 404 b(1) guideline report and analysis been completed?

R-26: Vegetation types were identified from the Montana Gap Analysis Project. Wetlands and other special aquatic sites are not defined in that database. One could assume that wetlands would be associated with the riparian vegetation type. The 404 b(1) guidelines will be used at the project-specific level, but are not appropriate without a specific project location to evaluate.

C-27: In areas where CBM water is to be discharged, crops should be developed that are able to tolerate the condition of the water.

R-27: Produced water must be tested for water quality before it can be put to a beneficial use including land applications or irrigation or discharged onto the surface. Only water of suitable quality, either before or after treatment, would be available to be used for beneficial uses or discharged onto the surface.

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C-28: The most serious threat to the region's biodiversity comes from the habitat fragmentation created by CBM development.

R-28: Habitat fragmentation has been considered in the impact analysis and lease stipulations and mitigation measures have been incorporated into the Preferred Alternative to curb the effect and provide protection to targeted species habitat.

C-29: How will the companies stop exotic plant growth along roads?

R-29: Operators will be required to develop and implement weed action plans which would include exotic plants.

Visual Resource Management

Comments and Responses

Comment 1 (C-1): How about mitigating the visual quality concerns by establishing some guidelines?

Response 1 (R-1): The EIS outlines mitigation measures to reduce the visual impacts of CBM wells and compressor stations. These represent guidelines that will be followed during development.

C-2: How do we apply for Class I or II Visual Resource Management (VRM) status?

R-2: VRM status applies only to surface lands managed by the BLM and is assigned by the BLM in the planning process based on a variety of elements related to visual quality and the view shed. Copies of the criteria are available by request from the BLM.

C-3: What compensation will there be to surface owners for the devaluing of their land and other economic hardships they will incur because of the visual impacts of CBM development? Is damage to visual impacts taken into account when assessing damage to property values and pre-existing businesses?

R-3: Compensation will be determined through agreements between the surface owner and the mineral owner.

C-4: The EIS does not have any reference to where VRM Class I, II, III or IV is located within the project area.

R-4: Location of VRM areas is available through VRM maps in land use plans located at the BLM office.

C-5: Visual resources will be affected profoundly by CBM development. This is evident from road building projections in the EIS, by the projections of numbers of wells--which mean wellpads and associated machinery, and by the increase in housing and other development that will occur as secondary results of CBM development. Why is there no discussion of the impact that the widespread alteration of the landscape will have on residents, tourism, and our economy in general? There is no discussion about the impact on the aesthetic qualities

of the landscape that are generally associated with our state, such as wide open spaces, solitude, sounds of bird songs, and the opportunities this quiet landscape provides for reflection. Why weren't these issues considered in the DEIS?

R-5: Impacts on aesthetic and scenic qualities are discussed in the Visual Resources section of Chapter 4 of the Final EIS. Mitigation measures as described in Alternative E-Preferred Alternative of Chapter 2 and Table MIN-5 in the Minerals Appendix of the EIS will be used to minimize impacts to visual resources and the landscape in the area of CBM development. Impacts to solitude would be analyzed if the area was being considered for wilderness. Since none of the alternatives include a proposal for wilderness, impacts to solitude were not analyzed. Chapter 2 includes actions to mitigate noise.

C-6: We are concerned with the disruption of views that could result from the installation of CBM facilities such as wellheads, pump shacks, powerlines, and pipelines.

R-6: Impacts on aesthetic and scenic qualities are discussed in the Visual Resources section of Chapter 4 of the Final EIS. Mitigation measures as described in Alternative E-Preferred Alternative of Chapter 2 and Table MIN-5 in the Minerals Appendix of the EIS will be used to minimize impacts to visual resources and the landscape in the area of CBM development. Sight specific impacts would be analyzed at the APD and/or POD stage.

Wilderness Study Areas

Comments and Responses

Comment 1 (C-1): The DEIS touches only briefly on Wilderness Study Areas (WSA) within the planning area.

Response 1 (R-1): As CBM development will not be conducted in these areas, they are only touched on briefly.

C-2: The section on WSA is less than one page and does not constitute an analysis. Although there are restrictions on leasing in WSAs, it is clear from language in the EIS that increased development would result in increased access, via the increase in roads, to remote areas. Why are the impacts on WSAs not analyzed with more careful attention to the potential of CBM development to encourage increased access into these remote and sensitive areas?

R-2: The wilderness analysis is brief because these areas are not expected to be impacted by project activities. Remote areas may be accessed as CBM development proceeds, but this does not include WSAs.

Wildlife

Comments and Responses

Comment 1 (C-1): There is nothing in-depth about the Bozeman Pass area, and the document offers no adequate measures to mitigate these impacts.

Response 1 (R-1): The document discusses impacts from CBM development that may occur within Montana on a general scale. Impacts at specific locations will be analyzed when site-specific proposals are made.

C-2: Thorough fish and wildlife inventories are needed, which the EIS lacks.

R-2: This document intended to discuss impacts from CBM development that may occur over a large area of Montana. No specific areas have been identified for development. Therefore, studies at sites of actual CBM development are not possible at this time. The BLM will conduct detailed biological clearances and evaluations on specific projects when Project Plans are submitted for review and approval (see WMPP, Wildlife Appendix).

C-3: Gallatin Pass area is unique and requires thorough and separate analysis in the EIS.

R-3: See **R-1**.

C-4: The pipelines and roads will affect nearly every species of wild game and fish populations in the areas where the wells are drilled.

R-4: The EIS provides an extensive discussion of the types of impacts that would be expected to affect a wide range of wildlife and fish species and their habitats.

C-5: The EIS does not adequately address the impacts of highly saline water on aquatic ecosystem and on streams and damage to wildlife habitat.

R-5: The EIS notes that substantially higher flows and degraded water quality would result in potentially substantial erosion of wetland and riparian communities and wildlife habitat degradation from higher SAR levels. Potential resultant effects on aquatic resources from exploration and development activities are discussed extensively in the EIS.

C-6: CBM development will lead to the drying of springs crucial for livestock and wildlife.

R-6: This impact is discussed. However, as stated in the Hydrology section of the EIS, shallow aquifers should be isolated from water withdrawal in deeper

aquifers in many instances. This would minimize impacts on surface vegetation that is dependent on the shallow water table. Desertification should not be a widespread problem. An evaluation of impacts will be made for individual permit applications and measures taken to avoid or minimize impacts on sensitive vegetation and wildlife.

C-7: Many species will be harmed by the proposed action.

R-7: The EIS notes that impacts on wildlife will be widespread.

C-8: There is no meaningful analysis of the potential effects of development on vulnerable populations, and there is no discussion of adequate mitigation measures.

R-8: See **R-1**. Also, the EIS discusses expected impacts on rare and sensitive species identified by State and Federal agencies. See the Wildlife Monitoring and Protection Plan (WMPP) in the Wildlife Appendix for additional inventory and monitoring commitments on the part of BLM and inventory, monitoring, avoidance and protection recommendations for operators. BLM will address impacts on vulnerable populations as part of their assessment of specific project applications. See biological opinion mitigation measures added to Alternative E in Chapter 2.

C-9: CBM water will create and enhance habitat for ducks, shorebirds and small mammals, as well as cattle.

R-9: The EIS notes that increased flows may result in improved and more extensive riparian vegetation in intermittent drainages where seasonal water stress limits the current extent or condition of the vegetation and in more widespread water availability for wildlife. The term wildlife is intended to cover a range of species that would use these habitat types. However, this benefit would be offset if more livestock grazing occurs in the vicinity and downstream of the discharge points.

C-10: Rural electric utilities have adopted construction techniques that are uniformly employed to eliminate risks of raptor electrocution.

R-10: The text was modified to reflect this, however it is further recognized that following raptor proof guidelines, threat of electrocution is not eliminated.

C-11: Full consideration of the habitat fragmentation on landscape scale evolutionary processes is not discussed.

R-11: See **R-1**. Given that specific locations of CBM development are not known, it is not possible to address habitat fragmentation and landscape level evolutionary processes more fully than they have been addressed at this time. However, it is recognized in the document that

direct and indirect impacts may effect up to 4.7 million acres of habitat (Table 4-41).The BLM has committed to addressing a full range of biological topics on specific projects when Project Plans are submitted for review and approval.

C-12: Loss of springs and wet meadows could impact many species.

R-12: See **R-6**.

C-13: Creation of new “wetlands” could act as population sinks for many species, and the wildlife that try to use them may be more vulnerable to predators.

R-13: The comment is addressed in the EIS.

C-14: Changes in flow regime and sediment flow can negatively impact many species.

R-14: See **R-5**.

C-15: How will clay-cemented surfaces affect everything from runoff and how would it affect use of the lands?

R-15: Soils of this type are poorly drained which can result in large volumes of water run-off and/or inundation of water. Pondered water would be available for wildlife use.

C-16: Accidental spills, leakage, run-off, leaching, drilling fluids, and other toxic substances pose a real threat to wildlife.

R-16: The comment is addressed in the EIS.

C-17: There is the problem of increasing traffic and its impacts.

R-17: The impacts of both roads and increased traffic are addressed in the EIS.

C-18: Invasive plants could affect hiding cover for some species, making them more vulnerable to predators.

R-18: The effects of noxious weeds and exotic plants on native vegetation and wildlife habitat and forage are discussed in the EIS.

C-19: There is no attempt to quantify the effect of thousands of miles of powerlines that will be built, providing new electrocution risks for birds of prey.

R-19: See **R-1**. The number of miles of new powerlines are described in the EIS. Site-specific impacts cannot be determined because the locations of CBM development are not known. The BLM is committed to addressing a full range of biological

topics on specific projects when Project Plans are submitted for review and approval.

C-20: The creation of numerous buildings, culverts, and other developments could lead to an increase in such smaller predators that could affect small prey species.

R-20: The new structures created by CBM could be preferred by several species, including some small predators.

C-21: An analysis of all potential prairie dog habitat should be completed prior to development.

R-21: Stipulations require avoidance of prairie dog towns larger than 80 acres to protect actual or potential black-footed ferret habitat if ferrets are found to be present. All prairie dog towns impacted by a federal action will be evaluated (see WMPP).

C-22: Potential impacts upon some species exist, yet no discussion is found in the EIS.

R-22: See **R-1**. The discussion of impacts addresses a wide range of species and the types of impacts on wildlife and habitat that would be expected.

C-23: Winds could carry air pollutants into the higher elevations, which have granitic cores with poor buffering capacity and may suffer from acidification affecting fish populations, invertebrates, amphibians and other species. We found no mention of this potential impact in the document.

R-23: Acid deposition is being addressed in recent air modeling and is reported in the EIS. If this is found to be a potential problem, it will be addressed in the Aquatics section. See Air Quality (Chapter 4 and Air Quality Appendix).

C-24: Any shift in habitat utilization or intensity of use by livestock as a result of CBM development has the potential to lead to negative impacts on wildlife not directly the result of CBM development.

R-24: Changes in livestock use as a result of increased water availability because of CBM development and the effects on wildlife and habitat were addressed in the EIS. The EIS states, “ Each CBM production well field that is located in an area without perennial water sources could make up to several thousand acres available to more intensive cattle grazing. Utilization would be most intensive in the immediate vicinity of the water discharge location wells. Increased livestock grazing reduces forage otherwise available for wildlife and degrades habitat value for many species of wildlife (Saab et al. 1995). The additional CBM water would also be available for wildlife use.”

CHAPTER 5
Wildlife

C-25: The EIS appears incomplete with respect to fish and wildlife issues without documenting any correspondence or data offered by regional biologists.

R-25: The nature of this document, the large area over which impacts may occur, and the lack of knowledge on specific impact locations substantially reduced the need for site-specific biological data. However, the species that occur on lands and in water bodies located over the widespread coal beds in Montana were addressed along with expected impacts on those species and their habitats. Regional agency data bases that describe aquatic species composition, abundance, and habitat characteristics were used to describe the affected environment and assess potential project effects in the EIS. Federal and State biologists were consulted on a regular basis during preparation of the EIS.

C-26: The EIS refers to impacts on gray wolf populations but does not provide any conservation measures. The loss of wolf individuals or loss of designated habitat resulting from any implementation of a CBM project is in violation of the ESA and may be considered an illegal taking. The EIS makes no mention of the future delisting of the gray wolf and Montana's proposed management plan.

R-26: The BLM conducted formal Section 7 consultation with the FWS for all proposed, candidate, and listed species during the preparation of this document. Appropriate conservation measures to reduce or avoid impacts will be developed for each project plan. (Refer to WMPP, BA and BO in the Wildlife Appendix).

C-27: Table 4-16 refers to Peregrine falcon nests. The proper term is eyrie (or aerie) and not nest.

R-27: The text was changed to reflect the comment.

C-28: The Wildlife section of Chapter 4 states that there will be no surface use related to CBM exploration within 0.5 mile of active nest sites during critical periods of time. The 0.5-mile zone is commonly used when there is no line of sight to the nest. The stipulation should state 1 mile if there is line of sight and if there is no line of sight. These distances should be the distance from the perimeter of the disturbance. Certain avian species require 1 and 2 mile distances, respectively.

R-28: The EIS recognizes that the 0.5-mile restriction will not protect all nesting raptors. Changing lease stipulations beyond the scope of this document (pg 2-2). However, additional management actions to mitigate impacts from CBM activities on raptors and other species provided in the Wildlife

Protection and Monitoring Plan (WMPP, Wildlife Appendix) may be implemented on a case-by-case basis as needed.

C-29: Is the 0.25-mile buffer stipulation provided for wetlands identified as piping plover and least tern habitat sufficient? Does the 0.25-mile refer to the well distance from the wetlands or the distance from the perimeter of the actual disturbance?

R-29: The 0.25 mile buffer is assumed to be sufficient. The quarter-mile restriction for least tern and piping plover would extend from the edge of the occupied wetland to the nearest surface disturbance associated with CBM development.

C-30: If a "may impact" conclusion is reached after suitable analysis by a Biological Assessment, then formal consultation with the FWS is mandated and suitable conservation measures (not mitigation measures) are required to be developed.

R-30: See **R-26**.

C-31: In Chapter 4, the section BLM, U.S. Forest Service (USFS), and Montana Species of Concern states that sage grouse will be impacted by CBM activities occurring within 2 miles of a lek or winter range. The sentence should state that sage grouse populations will be reduced or eliminated by CBM activities.

R-31: We agree that impacts on sage grouse would be observed at the population level, and the text was modified to reflect this.

C-32: The noise generated by compressor stations has been compared to the noise generated by jet engines. Studies exist that detail stress impacts on wildlife and subsequent habitat avoidance related to jet aircraft noise.

R-32: The EIS recognizes that noise will disturb wildlife and eliminate some species from very noisy areas. However, there is a 50 decibal limit on production facilities at a distance of 1/4 mile that will mitigate these impacts at greater distances.

"Other noise-related problems for birds around CBM exploration and production wells and compressors include interference with the ability to recognize warning calls and calls by juveniles. The area of disturbance would vary by species and CBM activity. Producing wells would be relatively quiet once regular production is underway. Compressors would be louder with noise levels at 50 decibels at a distance of 0.25 mile."

C-33: No mitigation measures are offered for roads constructed across wetlands and the subsequent loss of wetland habitat. Was the Corps of Engineers ever contacted for input during the development of the EIS?

R-33: Impacts on site-specific wetlands and riparian areas will be identified when a site-specific project is proposed. If appropriate, the Corps of Engineers will be consulted regarding Section 404 Permits. Wetland impacts will be determined at the time individual applications are reviewed. The 404 Permit will include required avoidance and mitigation measures. The Corps of Engineers was provided copies of the DEIS for review.

C-34: Waterfowl are protected under the Migratory Bird Treaty Act and therefore should be addressed in the EIS.

R-34: See *R-1*.

C-35: An ongoing study and reporting is needed on disturbances to both domestic animals and wildlife and plants in the area. The ecosystem needs to be monitored.

R-35: The BLM is fully committed to determining impacts from specific CBM projects when Project Plans are reviewed. Appropriate site-specific studies and clearances will be conducted at that time and mitigation measures will be developed and required. See *R-8*. The WMPP, in the Wildlife Appendix, includes the following provision regarding inventory and monitoring: "During project development (i.e., 25 years), operators will provide an updated inventory and description of all existing project features (i.e., location, size, and associated level of human activity at each feature), as well as those tentatively proposed for development during the next 12 months. This inventory will be submitted to the BLM by operators no later than October 15 of each calendar year. These data will be coupled with annual wildlife inventory, monitoring, and protection data obtained for the previous year and included in annual reports. Annual reports will be prepared by the BLM.

"When annual wildlife inventory, monitoring, and protection data are gathered by parties other than the BLM, those parties (e.g., operators, MFWP) will be requested to provide the data to the BLM by October 15 of each calendar year. Upon receipt of these data, annual reports will be completed in draft form by the BLM and submitted to the operators, FWS, MFWP, and other interested parties no later than November 15 of each year. A 1-day meeting of the *Team* and *Core Team* will be organized by the BLM and held in early December of each year to discuss and modify, as necessary, proposed wildlife inventory, monitoring, and protection protocol for the subsequent year. Additional meetings specific to a Regional Monitoring Unit (RMU) will be scheduled as necessary."

C-36: Will there be penalties for "accidents"? Will CBM companies be required to clean up their accidents and who will enforce that this cleanup is done in a timely way?

R-36: Penalties are assessed for accidents under the existing oil and gas regulations and operators are required to immediately clean up spills according to their Spill Prevention Control and Countermeasures Plans. Enforcement is based on jurisdiction, but in the majority of cases it would be either the EPA or MDEQ. See the Solid and Hazardous Waste section in Chapter 4 for more detail.

C-37: The absence of a Flora/Fauna study effectively disqualifies any meaningful analysis of effects to agriculture and recreation due to impacts on forage, game and non-game wildlife associated with CBM development. Because of the absence of this data, the EIS does not allow the opportunity for public comment on an important aspect of the analysis.

R-37: See *R-1*. The EIS discusses the types of plant communities that occur in potential CBM areas and addresses potential impacts on these lands. Habitat effects are also discussed at length.

C-38: An obvious deficiency in the EIS is the omission of several species of special concern.

R-38: All species of concern identified by state and federal agencies, that may occur in the project area and are classified "S1" or higher, are addressed in the Wildlife Appendix.

C-39: The EIS focuses primarily on species occurring within the planning areas but does not address their natural history strategies or the chemical and physical conditions that support these organisms.

R-39: Wildlife species and their habitat needs are addressed in the wildlife section of Chapter 3, the BA and the BO (Wildlife Appendix).

C-40: The EIS fails to recognize the high biological integrity and ecological value of the Powder River.

R-40: The Powder River and its tributaries were discussed extensively in Chapter 3 under the heading Powder River RMP Area. Discussions focused on the composition and abundance of different fish species in these drainages, fisheries management objectives, and characterizations of drainage conditions. This information was presented in text and summary tables in the EIS. Chapter 4 of the EIS analyzed potential project effects on aquatic resources and habitat. It identified drainages that might be most affected by CBM development and the sensitivity of those drainages to

potential impacts. Those discussions considered Powder River drainages.

C-41: There is no analysis of the cumulative effects, considering the existing development in Wyoming on wildlife resources, which of course do not recognize administrative boundaries.

R-41: The EIS states, “Impacts from Wyoming CBM development on wildlife and wildlife habitat would be similar to those described under Alternative A, but at a far larger scale. More than 7.5 times as many CBM wells may be developed in the Powder River basin of Wyoming than the 18,275 considered under Alternatives B, C, D, and E. The magnitude of direct and indirect Wyoming CBM impacts on wildlife and wildlife habitat would be about 7.5 times greater than described for Alternatives B, C, D, and E.

C-42: The analysis does not adequately disclose the effects of CBM development on private lands where industry would not be responsible for providing compensation for the loss of wildlife and/or wildlife habitat.

R-42: The Minerals Appendix indicates those mitigation measures that may be implemented on state or federal lands. The text has been modified to clarify that these measures would not apply to private lands and that additional impacts would occur on private lands. However, mitigation measures and conditions of approval will apply to private lands that are being developed for federal minerals.

C-43: The effects analysis does not adequately disclose the impact of the wastewater generated by CBM development on wildlife relative to aquifer recharge and the contamination of surface waters. Further, the analysis dismisses the serious consideration of an alternative that would feature “re-injection” of the water produced by CBM wells.

R-43: The EIS recognizes that there are water quality issues associated with CBM water. The preferred alternative does not allow reinjection of this water into the aquifer to avoid contamination and it requires that all surface water be treated to meet Montana water quality standards prior to discharge.

C-44: The analysis is flawed in regard to its assumption that the water created through the extraction process would benefit wildlife. The analysis does not include data to indicate where or how much water would benefit wildlife resources.

R-44: See **R-24**. The EIS also states, “The release of untreated CBM water to surface drainages and streams could result in serious erosion, damaging or

destroying instream and streambank riparian vegetation that constitutes valuable wildlife habitat (Regele and Stark 2000). The erosion can result in increased sediment loads, increased SAR values, which along with the potential high salinity, can degrade the stream and impact riparian vegetation.”

C-45: Given the premise that wells will be sited at varying spacings, to comply with MBOGC regulations, what mitigation measures do you propose? For different species?

R-45: All wildlife management actions are made with the assumption of maximum well spacing.

C-46: Table 4-38 of the DEIS estimates possible road densities for the different alternatives. Are the BLM and the State of Montana going to wait until sage grouse are listed before taking action to protect sage grouse habitat? What impact do you expect on such species as the burrowing owl and the mountain plover? What about other species of birds that are sagebrush obligates?

R-46: The assumption is made that existing stipulations will provide some protection to sage grouse habitat including lek areas, nesting habitat and winter range. It is recognized that these actions will not completely protect this species. Mitigation measures within the Wildlife Monitoring and Protection Plan (WMPP) will provide additional protective measures. Lease stipulations and terms and conditions will provide protection to raptors and the mountain plover. Protective measures contained in the WMPP (if fully implemented) will help reduce, but cannot avoid all, impacts to all species of wildlife including sagebrush-obligate birds.

C-47: Stipulations in Table MIN-5 of the DEIS protect wildlife, however, Table 4-16 (DEIS) states that the stipulation “does not apply to operations and maintenance of production facilities.” Operation and maintenance constitutes the greater amount of activity. How do you reconcile these differences?

R-47: We agree that operation and maintenance pose threats to wildlife. However, if conditions of approval are consistent with the WMPP and terms and conditions of the BO, this will help reduce or avoid some impacts associated with operation and maintenance.

C-48: The present baseline data are totally inadequate to allow an adequate evaluation of the potential impacts on sage grouse in the area. The entire discussion of indirect and cumulative effects of CBM development on sage grouse is inadequate. There is almost no discussion of mitigation for habitat loss or direct impacts of CBM development on sage grouse.

R-48: See **R-1**. Impacts on sage grouse were discussed in detail and impacts were projected to occur on several million acres. Proactive management for sage grouse and other species is offered, but not required at this time, in the WMPP (Wildlife Appendix).

C-49: The EIS uses minimal distances such as 0.25 mile for no disturbance during the breeding season. This “magic” number has been created by the BLM without any scientific basis and contradicts published guidelines dating to 1977 (Braun et al. 1977) and more recently (Connelly et al. 2000). Further, the BLM has publicly accepted the published guidelines and has promoted use of selected recommendations. This selective use of the published literature has been done despite clear evidence that sage-grouse are negatively impacted by disturbance activities.

R-49: The EIS cites these same references and recognizes that the stipulations are not adequate to avoid impacts on sage grouse. The text states, “Therefore, while important, protecting a 0.25-mile radius area around leks as specified in the stipulations, is inadequate to avoid impacts on displaying and nesting birds.” Although there are additional lease stipulations that offer protection to sage grouse nesting and wintering areas during exploration activities, it is recognized there would be impacts associated with production and maintenance activities. However, protective measures may be developed at the project plan level and incorporated as “Conditions of Approval” (See WMPP).

C-50: Surface disturbance leads to the spread of noxious weeds. The long-term repercussions that noxious weeds have on native wildlife populations are devastating and well documented.

R-50: We agree and have stated so in the document. See **R-18**.

C-51: Community relationships among these species were not analyzed. While the EIS indicated that subsequent site-specific compliance documents will do this, the alternatives proposed in this EIS do not analyze or consider the cumulative impacts that will result from widespread community disruption and destruction.

R-51: Landscape-scale as well as cumulative impacts were analyzed in the document.

C-52: CBM development will have severe impacts on ferruginous hawks because of the increased human presence, disturbance, and noise; these

impacts were not acknowledged nor were mitigations suggested in the EIS.

R-52: See **R-28**. The ferruginous hawk has a NSO stipulation for 1/2 mile from a nest and additional protective measures within the WMPP. However, this is one of the species that is very sensitive to human activities discussed in Chapter 4, Wildlife, and all impacts would not be avoided.

C-53: Sage grouse are a possible candidate for listing under the ESA.

R-53: We agree.

C-54: The Affected Environment in Chapter 3 does not describe the array of habitats present in the area that will be fragmented, destroyed, or otherwise altered by this massive development. No studies were done or referred to that describe the array of habitats critical to all wildlife, but in particular, those threatened, endangered, and state-listed species of special concern.

R-54: The array of habitats, including fragmentation and disturbance is discussed in the EIS. Additionally, special status species are discussed in the EIS text, Biological Assessment and Opinion.

C-55: Why does the EIS not recognize and discuss the cumulative effects that this project will have on native neo-tropical migratory birds and game birds?

R-55: See **R-1**. Neo-tropical migrant birds are one group of wildlife that would be affected by CBM development, as described in the EIS. Because of the nature of the document, many individual species were not addressed. However, the types of impacts that would affect all wildlife were discussed at length.

C-56: Providing a thorough laundry list of the types of impacts expected to be generated by CBM methane development is insufficient for NEPA purposes. In addition, the BLM is responsible for quantifying the magnitude of those impacts.

R-56: See **R-1**. Given the nature of the document and the lack of specificity regarding impact sites, the EIS quantified impacts where this was possible. The lengthy discussion of the types of impacts that would be expected and the types of species and habitats affected is quite appropriate for an EIS. As stated in the EIS, the BLM is committed to conducting appropriate site-specific analyses of Project Plans as they are submitted for review.

C-57: Authors of the EIS conclude that “direct and indirect impacts on wildlife from this scale of development would be both widespread and substantial.

R-57: While it is apparent wildlife impacts may be substantial, measures such as the WMPP and Terms and Conditions of the Biological Opinion will help lessen these impacts for some species.

C-58: After listing multiple sources of stress, little qualitative, and no quantitative, analysis is conducted. There is no analysis of the possible cumulative or synergistic (combined effects are greater than the sum of the parts) effects that can arise from multiple stressors acting simultaneously on a wildlife species.

R-58: We agree that this type of analysis is required before CBM development proceeds. However, without knowledge of specific actions it is not possible. As stated in the EIS, the BLM is committed to conducting appropriate site-specific analyses of Project Plans as they are submitted for review.

C-59: Chapter 4 focused almost exclusively on the area of habitat expected to be impacted by CBM development. In no case was there an attempt to relate the amount of habitat listed to the expected change in population distribution for any species. Equally important is an estimate of how the spatial distribution of the habitat will change following CBM development.

R-59: The analyses you request would be conducted by the BLM as specific Project Plans are reviewed.

C-60: CBM well disturbance at a given site is temporarily put on hold to protect a sensitive species for a relative short time interval during a given year. After that interval, the activity can proceed, leading to temporary or long-term habitat loss.

R-60: There is variability within present lease stipulations that offer protection from permanent to seasonal. Measures within the WMPP will offer additional protection to sensitive species. It is recognized that all impacts cannot be avoided.

C-61: Why are the State and the BLM taking the position of waiting until a known sensitive species, sage grouse for example, is formally “listed” as “endangered” or “threatened” before taking a position to protect that species? The EIS is defective and unacceptable because of this omission.

R-61: See *R-46 and R-48*.

C-62: A principal component of Alternative E (Preferred Alternative) must include a habitat management goal of no net loss of sagebrush steppe to maintain sage grouse and other wildlife species dependent on this habitat requiring reclamation of disturbed lands, rights of way to include replacement

of the original shrub component to provide habitat fragmentation.

R-62: The BLM’s policy requires reclamation of disturbed lands, not restoration of habitats present before disturbance. There is no requirement to specifically re-establish native grasses, forbs, or shrubs, although these species may be included in seed mixes. The EIS states, “The intent of reclamation is to re-establish a vegetative cover on disturbed areas rather than to restore native plant communities, as they existed prior to disturbance. Plant species diversity would be lower on reclaimed sites than before disturbance, reducing overall wildlife habitat values.” Sagebrush is characteristically very difficult to establish, however creative approaches to reclamation are suggested in the WMPP and the species will be a focus.

C-63: The gaps in wildlife baseline biological studies inadequately address the impact full field development will have on wildlife. We recommend a phased development plan.

R-63: See *R-1* and *R-28*, and the Wildlife section of Chapter 4 in the FEIS.

C-64: There is no mention of small-mouth bass in the Tongue River, which is the major game fish below the Tongue River Reservoir.

R-64: The EIS discusses the occurrence of small-mouth bass in the Tongue River and its prominence downstream of Tongue River Reservoir.

C-65: Alternative E (Preferred Alternative) states, “Operators would ... how impacts on surface resources, such as wildlife, would be minimized.” It is recommended that the word “inventoried” be inserted before wildlife, so that actual wildlife use of the area is addressed.

R-65: The text has been changed to reflect the comment.

C-66: The sage grouse stipulations in Table 4-16 of the DEIS have been used to effectively protect sage grouse and there is no evidence of sage grouse incompatibility with natural gas production.

R-66: We were unable to locate any published literature indicating that widespread CBM development and sage grouse are compatible over the long term. Substantial documentation is cited in the EIS that various types of disturbance and activities associated with CBM development (roads, powerlines, noise, human activity, etc.) are not compatible with long-term sustainability of sage grouse populations. However, with implementation of lease stipulations and measures in the WMPP impacts to sage grouse may be lessened.

C-67: Why has specific data not been included about impacts on the Yellowstone River, on the pallid sturgeon population in the Yellowstone River, on the paddlefish population, and the potential economic impacts on the Glendive Chamber of Commerce's paddlefish caviar operation? Where is the study of the plant, animal, and fisheries inventories on the lower Yellowstone River?

R-67: See **R-1**. Fish, wildlife, and plant populations and impacts were presented in their respective appendices and in the Chapters 3 and 4 text. Additionally, the pallid sturgeon is discussed in the Biological Assessment and Opinion.

C-68: Why does Alternative E (Preferred Alternative) have no mitigating measures to protect wildlife? Chapter 4, Table 4-19 (DEIS), states impacts on wildlife under Alternative E are the same as under Alternative C, which emphasizes CBM development with minimal resource protection.

R-68: Impacts to wildlife under Alternative E are similar to those described for C, however, there are many measures offered in Alternative E that will substantially reduce impacts to wildlife. See the Wildlife Monitoring and Protection Plan and Biological Opinion located in the Wildlife Appendix for these protective measures.

C-69: The BLM, and their non-federal representatives should work with the Service in developing surveys, impact minimization measures, and conservation measures for all federally listed species.

R-69: The BLM completed formal consultation with the US FWS concerning all listed species within the planning area. See discussion within the Biological Assessment and Biological Opinion located in the Wildlife Appendix.

C-70: The federal status for the black-footed ferret should be E/10(j) because there is a non-essential experimental population in Blaine County.

R-70: The text has been changed.

C-71: Because domestic dogs can pose a threat to mountain plover nests and flightless chicks, dogs should not accompany BLM employees, operators, and sub-contractors in their vehicles on-site during working hours.

R-71: As specified in the WMPP in the Wildlife Appendix, the BLM will develop an information and education program to inform operators about sensitive species and habitats before exploration and development begins. Additionally, dogs and sensitive

species management are addressed in the Biological Assessment and terms and conditions of the Biological Opinion.

C-72: Why do the EIS alternatives, in particular Alternative E—Preferred Alternative, not provide detailed development scenarios and mitigation capable of reducing detrimental impacts on the diverse public fish and wildlife within the described area nor ensure the long-range viability of existing populations?

R-72: Potential development scenarios are presented in the document. The preferred alternative offers lease stipulations, protective measures provided in the WMPP and terms and conditions of the Biological Opinion intended to reduce, but not avoid, all impacts on wildlife.

C-73: Why does the EIS lack consideration, mitigation, for the continuance of historically legitimate-traditional hunting and fishing opportunities?

R-73: Impacts on hunting opportunities were addressed in the EIS. No mitigation of these impacts is proposed at this time.

C-74: Why would activities be allowed within 0.25-mile of sage grouse leks knowing activities and noise from compressors will disrupt reproductive habits and, consequently, populations?

R-74: No surface occupancy is allowed within 0.25 mile of sage grouse leks. Additionally, there is noise restrictions for compressors and other mitigation measures offered in the WMPP.

C-75: Why is there no provision for “no net loss” of sagebrush-steppe habitat that is necessary for viable populations of sage grouse and other non-game species?

R-75: See **R-62**.

C-76: How can Alternative E promote, “no degradation of a watershed would be allowed” without predetermined water quality standards taking into consideration cumulative effects or discharge water treatment?

R-76: Montana DEQ narrative water quality standards will be followed. See Chapter 4, Hydrology, for details.

C-77: Why is it that, “... wintering and nesting sage grouse and nesting golden eagles would not be protected by stipulations and would be expected to suffer large-scale impacts”?

R-77: Existing lease stipulations do provide protection to winter/nesting sage grouse and nesting golden eagles. Also, it is expected that implementation of the WMPP may provide additional protection to these species where the WMPP provisions are applied.

CHAPTER 5
Wildlife

C-78: Why is the small-mouth fishery, rated as excellent in Montana Fish, Wildlife and Parks literature, not a listed species in the tables for the Tongue River?

R-78: See **R-64**.

C-79: Why are there no studies or mitigation relative to the loss of aquifers that sustain surface vegetation required for sustenance and cover for a diversity of wildlife?

R-79: As stated in the EIS, shallow aquifers should be isolated from water withdrawal in lower aquifers in many instances. This would minimize impacts on surface vegetation that is dependant on the shallow water table. Desertification should not be a widespread problem. An evaluation of impacts will be made for individual permit applications and measures taken to avoid or minimize impacts on sensitive vegetation.

C-80: What exactly are the “limits on available biological information”?

R-80: Most data regarding biological populations is very site specific, rendering it of little use in a document of this type. Therefore, the analysis focused on the types of habitats that would be impacted and the types of impacts on wildlife that would be expected to occur.

C-81: Why have “appropriate surveys conducted prior to construction” not been done prior to publishing this short-sighted document?

R-81: See **R-1**, **R-35**, and **R-69**.

C-82: The EIS should assess the appropriateness of using oil and grease results in determining impacts on fish and wildlife resources.

R-82: Oil and grease results are not being used to assess impacts on fish and wildlife resources. See Chapter 4, Wildlife.

C-83: In the Monitoring Appendix of the DEIS, diversity as well as population density would need to be measured.

R-83: We agree, impacts on species diversity will be addressed by BLM when individual applications are reviewed.

C-84: Where is the analysis of the impact of increased mosquito populations and the cumulative impact on wildlife and human health resulting from the mosquito infestations that will occur along with and the likely spraying to eliminate them?

R-84: Mosquito populations have not been shown to increase as a result of CBM development and therefore are not addressed in the EIS.

C-85: There is no analysis of the impact of standing water on bird migration.

R-85: This topic has been addressed in the EIS.

C-86: Will threatened or endangered species be relocated before the flooding takes place?

R-86: Site clearances for sensitive, threatened, and endangered species will be required before all surface disturbance or flooding. If such species or their habitat are located, appropriate conservation measures to avoid impacts will be required.

C-87: Likely result in the loss of fish populations as a result of the loss of the food base. These impacts have not been adequately addressed in the EIS.

R-87: Numerous potential effects on the prey base are discussed at the level appropriate for an EIS. The likelihood of substantial effects on all aquatic resources and their habitat from project exploration and development activities are described.

C-88: There is no baseline data in some instances.

R-88: See **R-1**.

C-89: Would like to see a more clear demonstration in the FEIS that the land in the project area “will provide food and habitat for fish and wildlife” consistent with FLPMA’s general provisions and that such habitat can be reclaimed adequately to support wildlife populations post-drilling.

R-89: The BLM’s policy requires reclamation of disturbed lands, not restoration of habitats present before disturbance. There is no requirement to specifically re-establish native grasses, forbs, or shrubs, although these species may be included in seed mixes. See **R-62**. Because of differences in plant species composition, reclamation of disturbed lands will result in habitats that support certain wildlife species rather than all wildlife species present before development.

C-90: The NSO stipulation buffers should be extended to a 2-mile (3.2-kilometer) radius around any active leking area. For migratory populations, the buffer may need to extend 18 kilometers for leks to ensure nest sites are protected. This buffer should also exclude powerlines from the area.

R-90: The EIS is a development document, not a leasing document and any changes to stipulations are not included.

C-91: The plan has no alternative that considers prohibiting surface use from March 1 to June 15 for all activities (including operation and maintenance), burying powerlines, minimizing noise from compressor stations and well pumps, or reinjecting production water.

R-91: The standard lease terms, as stated earlier, can be used to reduce or avoid impacts of concern during operations and maintenance. The Wildlife Monitoring and Protection Plan contains many measures that could be proposed by the operator or imposed by the BLM if justified. However, these provisions are not required at this time. Alternative E includes burying pipelines near sage grouse habitat and noise reduction measures. Reinjection is included in Alternative B.

C-92: The EIS fails to adequately analyze how new roads will influence vulnerability of formerly inaccessible wildlife to hunter harvest.

R-92: The EIS states that impacts on wildlife would be widespread. One of these impacts is, “the increased access provided by both CBM and user-created trails and roads over the span of all CBM phases and beyond, which would result in additional legal harvest and illegal poaching of game animals (Cole et al. 1997), target shooting of animals such as prairie dogs and other similar species (Ingles 1965), and chasing and harassing of animals (Posewitz 1994, USDI and USDA 2001).” Since no specific sites have been identified for CBM development, it is not possible to assess the effects of new roads and increased access on the vulnerability of specific populations of inaccessible wildlife to hunter harvest. The BLM is fully committed to determining impacts from specific CBM projects when Project Plans are reviewed. Appropriate site-specific studies and clearances will be conducted at that time and mitigation measures will be developed and required.

C-93: The EIS states the exploration activities would temporarily displace game species and production facilities would reduce the number of game animals or force animals to move from the area, but the document offers no adequate measures to mitigate these impacts.

R-93: Current lease stipulations offer some degree of protection to certain species during exploration activities. The WMPP offers measures that may help reduce impacts during critical time periods.

C-94: From Chapter 4, Wildlife Assumptions: Please consider subsistence use of and dependence on wildlife in the impacts and mitigation discussion for the Northern Cheyenne.

R-94: This has been addressed in the EIS.

C-95: Regarding the Tongue River Reservoir, how would this fishery be impacted?

R-95: No projects have been identified, therefore specific impacts on the reservoir cannot be assessed. However, under the Preferred Alternative, the operator is required to develop a Water Management Plan that demonstrates how they will dispose of their disposed water without degrading surface water bodies. Furthermore, an agreement between the states of Wyoming and Montana has been reached that ensures the quality of the water reaching the Tongue River Reservoir from Wyoming meets Montana’s standards.

C-96: Has the BLM given any thought to the impact spreading or new fires would have on vegetation or wildlife (endangered species)?

R-96: The EIS notes that both CBM activity and unrelated human activities occurring along CBM roads or in formerly inaccessible areas that are opened to vehicle and ORV traffic because of CBM roads will likely result in an increase in wild fires.

C-97: Table 4-16 of the DEIS states that in order for prairie dog colonies to be potential black-footed ferret habitat, they need to consist of an appropriate burrow density in addition to size.

R-97: We agree, but the table lists current stipulations, and size as the first criteria of dog towns is the most important.

C-98: Table 4-16 of the DEIS appears to be incomplete. Mountain plovers are not on the list, but there is a stipulation described in the text. Also, there are stipulations for gray wolf, Canada lynx, and grizzly bear that are not included in the table.

R-98: The table includes current stipulations already in place. Mitigation measures for the mountain plover, lynx, gray wolf and grizzly bear are provided in the WMPP. Additionally, specific actions are required as terms and conditions in the Biological Opinion for mountain plover.

C-99: Chapter 4, Impacts From Management Specific to Each Alternative, states, “Grouse are particularly susceptible to collision mortality during the spring because they often fly to and from leks near the ground.” This statement needs to be supported by a literature citation.

R-99: Sage grouse rarely fly very high off the ground, based on personal observation.

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C-100: Chapter 4, Impacts From Management Specific to Each Alternative, states, “Roads displace animals from otherwise useable habitat.” This sentence should be more specific. Roads do not displace all animals. They may displace some big game species.

R-100: The text was revised to reflect that not all species are displaced by roads.

C-101: Chapter 4, Impacts From Management Specific to Each Alternative, states, “These factors contribute to reduced over winter survival for individuals, poor condition entering the breeding season, reduced reproductive success and recruitment, and eventually population declines.” Need a literature citation.

R-101: Citations have been added.

C-102: Chapter 4, Impacts From Management Specific to Each Alternative, states that while some raptor species are threatened, endangered, or species of concern, ravens are none of these. Ravens should be removed from this discussion.

R-102: This discussion is not related to threatened and endangered species.

C-103: Chapter 4, Impacts From Management Specific to Each Alternative, states, “Chronic physiological stress on wildlife can result in increased sickness, a decrease in individual productivity, and eventually result in population declines.” While this may be true, there is no evidence that CBM development will lead to these events.

R-103: Substantial documentation is cited in the EIS about that the types of disturbance and activities associated with CBM development (roads, powerlines, noise, human activity, etc.) that result in chronic physiological stress in sensitive wildlife species can result in increased sickness, a decrease in individual productivity, and eventually result in population declines.

C-104: In Chapter 4, Impacts From Management Specific to each Alternative for Mountain Plover, it states that empirical evidence is lacking that shows whether or not exploration or development impacts the mountain plover. In fact, the mountain plover is a species commonly associated with disturbed grasslands. Therefore, exploration and development may create suitable mountain plover habitat.

R-104: We agree that mountain plover are a species of short grass, even disturbed sites, but we stand by this statement. This species can be disturbed from

their nesting by human activity. The FWS recommends avoiding nesting plovers in order to help ensure successful nesting attempts See terms and conditions contained in Biological Opinion (Wildlife Appendix).

C-105: Chapter 4, BLM, USFS, and Montana Species of Concern, it states, “Eustace attributes this decline ...” This is an improper citation of Eustace.

R-105: Eustace made this statement concerning sage grouse population declines in southeastern Montana directly to the author of the Wildlife section.

C-106: In Chapter 4, BLM, USFS, and Montana Species of Concern, it states, “... and may nest within 660 feet of their previous year’s nest (Gates 1983, Lyon 2000).” This 660-foot distance is from Gates 1983 and is based on three birds that nested within this distance of the previous year’s nest. Other studies such as Lyon 2000, Fischer 1993 et. al., and Berry and Eng 1985 found average distances of 683 meters (2,240 feet), 740 meters (2,427 feet), and 552 meters (1,811 feet) respectively.

R-106: The text has been modified to reflect this additional information.

C-107: In Chapter 4, BLM, USFS, and Montana Species of Concern, it states, “Therefore, while important, protecting a 0.25-mile radius area around leks as specified in the stipulations, is inadequate.” There is no empirical evidence that shows that the 0.25-mile buffer is not adequate to avoid impacts on sage grouse leks. The 2-mile controlled surface use buffer around sage grouse leks is intended to protect nesting habitat during the nesting season. There is no empirical evidence that shows that this 2 mile buffer is not adequate. There is no empirical evidence that shows the CBM activity within 2 miles of sage grouse leks or within winter range will have an impact on sage grouse in the area.

R-107: The statements in the text are based on the guidelines to manage sage grouse populations and their habitats by Connelly et al. (2000). These guidelines are based on extensive literature that indicates that sage grouse are very sensitive to activity near the lek and that many birds nest beyond the 2-mile radius specified in the stipulation.

C-108: In Chapter 4, Species of Concern Mitigation Measures, Black-tailed Prairie Dog,, it states, “No mitigation measures are proposed for this species.” Table 4-16 of the DEIS indicates that there is a controlled surface use stipulation on prairie dog colonies greater than 80 acres in size.

R-108: Yes, that is correct. Stipulations are for black-footed ferret habitat and exceed 80 acres.

C-109: Chapter 4, Alternative E, Species of Concern, states, “All species of concern that are not federally protected would be impacted...” It is important to also consider the potential benefits of creating a mosaic of habitats, site-specific water quality, surface disturbance, technology and the resulting diversified habitats across the landscape. This conclusion is not consistent with existing data on water quality hydrology and wildlife data.

R-109: The mosaic would consist of suitable native habitat and unsuitable disturbed and reclaimed areas. Such a mosaic (especially in shrub-steppe and short grass prairie) is usually prime habitat for invasive species, predators, and nest parasites. Breaking up large intact blocks of habitat will eliminate use by species that require larger patches.

C-110: Page MON-15 in the Monitoring Appendix of the DEIS, first column, first paragraph: The EIS also applies to conventional oil and gas as well as CBM.

R-110: The text has been changed to reflect the comment.

C-111: Page MON-15, first column, first paragraph (DEIS): “A site specific plan ... will be required as part of each Project Plan.” Each of the permitting agencies, dependent on the ownership of the mineral and/or surface estate may not have the statutory authority to require such a “site specific plan.”

R-111: We recognize this, which is reflected in differences in the Minerals Appendix and the fact that impacts on private lands would be greater than on BLM lands. The WMPP (in the Wildlife Appendix) indicates those lands to which it would apply.

C-112: Page MON-15, first column, seventh bullet (DEIS): “Provide a mechanism for a rapid response to change environmental conditions.” The purpose of the WMPP is to provide a process for monitoring and mitigating impacts associated with oil and gas activities, not to change environmental conditions.

R-112: We agree and this is reflected in the WMPP in the Wildlife Appendix.

C-113: Page MON-15, first column, eighth bullet (DEIS): Purpose of the WMPP is not to “validate predictive models” but to assess assumptions made in the EIS and to revise the applicable projections.

R-113: We agree and this is reflected in the WMPP in the Wildlife Appendix.

C-114: Page MON-15, second column, third bullet (DEIS): “Locate storage facilities, generators and holding tanks outside the line of sight of important sage grouse breeding habitat.” There is not any data that demonstrates that “line of sight” is an issue with sage grouse breeding habitat. Also, whose “line of sight”?

R-114: “Line of sight” is commonly used terminology for wildlife mitigation measures. Topographical influences are also commonly used for wildlife mitigation purposes (see WMPP, Wildlife Appendix). In this case, “line of sight” refers to a facility being visible from sage grouse habitat.

C-115: The EIS failed to include information about wildlife species’ current population or distribution, the status of the population trend, or the location of any important habitat areas. The EIS does not indicate where Management Indicator Species are, nor if they will be directly, indirectly, or cumulatively affected.

R-115: See **R-1**. The BLM is fully committed to collecting and evaluating information about wildlife species’ current population or distribution, the status of the population trend, the location of any important habitat areas, and the presence of Management Indicator Species when specific Project Plans are reviewed. Impacts of proposed actions will be fully documented when Project Plans are reviewed. Appropriate site-specific studies and clearances will be conducted at that time and mitigation measures will be developed and required.

C-116: The EIS fails to mention wildlife connectivity and corridors. Migration corridors are mentioned for waterfowl (3-75), but not for wide-ranging wildlife species. This assessment should emphasize corridor use of both MIS (i.e., elk) and TES species. The cumulative intrusion of past and future development in the area and impacts related to drilling and full-scale development to functioning corridors should be evaluated.

R-116: See **R-1**. The BLM is fully committed to collecting and evaluating information about wildlife species’ migration corridors when Project Plans are reviewed. Appropriate site-specific studies and clearances will be conducted at that time and mitigation measures will be developed and required.

C-117: The Bozeman Pass area has been identified by land management agencies (Montana Fish, Wildlife and Parks, U.S. Forest Service, Interagency Grizzly Bear Committee) as critical for wildlife linkage. The issue of habitat and population connectivity for wide-ranging species such as deer, elk, wolves, mountain lions, bears, lynx, wolverine and others must be addressed in the Statewide Oil and Gas Environmental Impact Statement.

R-117: See **R-1**.

C-118: The Wildlife Mitigation and Monitoring Plans section states that if disagreements between company and agencies representatives cannot be resolved, the BLM should retain the right to order a certain action in the case of a stalemate.

R-118: Although the intent of the WMPP is to apply Conditions of Approval to the APD and project plan for wildlife impacts in cooperation with industry, it is understood that BLM has the authority to implement COA as deemed appropriate and justified. Administrative Appeal processes are available to concerned parties.

C-119: BLM admits that the existing sage grouse lease stipulations are inadequate to protect the sage grouse.

R-119: See **R-77**.

C-120: In Chapter 4, Aquatic Resources, the agencies state the “impacts on aquatic habitat and biota from the magnitude of [Wyoming] discharge also would be substantial.” The agencies make no effort to quantify the impacts of CBM discharges from Wyoming on aquatic life much less discuss and quantify the cumulative impacts of such discharges when combined with discharges from Montana development.

R-120: As stated in the EIS, Montana and Wyoming DEQs have agreed to set discharge permit limits that result in no impact on Montana waters. Therefore, there would be no potential for combined cumulative impacts on Montana waters.

C-121: In Chapter 3, Wildlife, it states that a wide variety of neo-tropical migrants pass through or breed in the planning areas. Which species? Do they pass through or just breed?

R-121: Most pass through and a smaller number of species remain to breed, with the largest number of species found in riparian areas and wetlands.

C-122: Chapter 4, Alternative A, Conclusions, reads, “Cumulative impacts from CBM development in Wyoming would have an impact, particularly those species that spend all or part of their life in or near the Powder, Little Powder, or Tongue Rivers.” Please identify the species.

R-122: See **R-1**.

C-123: Regarding impacts on wildlife from Alternative C, even though this Alternative and Alternative E would have 30 percent more surface

disturbance than Alternatives B and D because travel corridors would not be required, the EIS uses identical language to described the impacts “direct and indirect impacts on wildlife from this scale of development would be both widespread and substantial.”

R-123: The scale of development for all of the alternatives is so large that all would have widespread impacts on wildlife, proportional to the level of disturbance and human activity.

C-124: In the EIS, the agencies state that “a more detailed monitoring program for wildlife will be included in the FEIS.” Neither the public; FWS; Montana Department of Fish, Wildlife and Parks; nor other agencies will have an opportunity to comment on the wildlife monitoring program.

R-124: A more detailed WMPP has been developed for the FEIS and included in the Wildlife Appendix. This plan was developed with the assistance of the FWS; Montana Department of Fish, Wildlife and Parks; and BLM biologists.

C-125: The BLM has not prepared a biological assessment for any of the listed species in the planning area or for any of the candidate species and has therefore violated the ESA.

R-125: The BLM has completed formal consultation with the USFWS. This effort was ongoing at the time the DEIS was issued. Refer to the Biological Assessment and Biological Opinion located in the Wildlife Appendix.

C-126: Chapter 4, Alternative A, Conclusions, reads, “If habitat degradation is kept at a minimum ... by this alternative.” This sentence is 80 words long, not to mention confusing. What does “affected but are not likely to be critically affected, directly, by this alternative” mean?”

R-126: The text has been reviewed and modified.

C-127: Creation of impoundment may alter livestock and wildlife migration patterns, benefit some species over others resulting in changes to wildlife population dynamics, what happens when water is no longer available?

R-127: Any benefits to wildlife would cease at this time when impoundments are dry.

C-128: Chapter 3, Wildlife states that the planning area supports 10 species of bats, 8 species of shrews, 34 species of small mammals, 17 species of omnivores, and 5 to 7 big game species for total of 74 to 76 species of mammals. The EIS refers to 250 species of birds, 9 species of amphibians, 14 species of reptiles. Letters in

the Wildlife Appendix state that there are 6 species of amphibians, 12 species of reptiles, 184 species of birds, and 43 species of mammals known to occur in the planning area.

R-128: We believe that the information in the EIS is correct as it was obtained from the Montana Gap Analysis Project and is based on habitat types present in the project area.

C-129: A wealth of wildlife data is available from EISs completed over the years for projects in the Billings and Powder River Resource Areas of Montana, including a proposed railroad, countless proposed and operating coal mines and power plants, etc. Where is this data?

R-129: Information from these sources was incorporated into this document, especially in Chapter 3. This information will also be useful during site-specific planning efforts.

C-130: In Chapter 3, Wildlife, please explain how timing and controlled surface use stipulations will protect wildlife populations and their habitat.

R-130: Timing and controlled surface use stipulations are intended to avoid some impacts on wildlife during sensitive periods. However, as pointed out in the EIS, these generally apply to exploration activities only. Therefore, these stipulations will not avoid any impacts during the CBM development and production phases. However, timing and controlled surface use stipulations may be applied site and project specific, as Conditions of Approval to the APD. Timing, controlled use and other measures are suggested practices in the WMPP.

C-131: In Chapter 4, Wildlife, under Assumptions, the BLM admits that existing sage grouse stipulations are inadequate but does not revise them. Why?

R-131: Leasing decisions are outside the scope of the plan. However, as stated in R-46 and R-48 additional protective measures provided in the WMPP may be implemented. See R-77.

C-132: In Chapter 4, Wildlife, under Assumptions, the BLM needs to develop stipulations for mountain plover, burrowing owl, and other species of concern, as well as other mitigation measures.

R-132: Inventory requirements and recommendations are included in the WMPP in the Wildlife Appendix may be implemented on a case-by-case basis. The mountain plover is addressed in the Terms and Conditions of the Biological Opinion.

C-133: In Chapter 4, Wildlife, Alternative A, it states that a detailed discussion of the impacts and mitigation measures for wildlife is included in the remainder of this section and the Wildlife Appendix. Where is the detailed discussion of the wildlife impacts and mitigation measures in the Wildlife Appendix?

R-133: The reference was incorrect and has been removed from the text.

C-134: Chapter 4, Wildlife, Alternative A Species of Concern, includes 9 federally list species (pallid sturgeon, bald eagle, mountain plover, interior least turn, gray wolf, Canada lynx, black-footed ferret, grizzly bear) and 3 federal candidate species (black-tailed prairie dog). What are the other two candidate species under the ESA?

R-134: The remaining two candidate species are the Montana arctic grayling and warm spring zaitzevian riffle beetle.

C-135: Chapter 4, Wildlife, Alternative A, states transmission lines may kill bald eagles because of electrocution. Impacts would be different if powerlines were required to be buried versus allowing them to be overhead.

R-135: The text has been modified to reflect the fact that the risk of electrocution on federal and state lands is small because the BLM and state will require that all powerlines and poles be constructed to standards that will avoid raptor electrocution (see the Minerals Appendix for details). Burying powerlines will be required in certain circumstances for specific species. See Biological Opinion and WMPP.

C-136: In Chapter 4, Wildlife, Alternative A, Mitigation, would mitigation measures apply to federal, state, and private lands?

R-136: The Minerals Appendix indicates which mitigation measures would apply to federal or state lands. Some Wildlife Mitigation measures may not be required on private lands by MBOGC policy.

C-137: In Chapter 4, Wildlife, Alternative A, Mitigation, what about surveys for proposed pipeline rights of way, transmission line corridors, compressor stations, impoundment and other water collection and disposal facilities? Will construction be allowed to proceed during the May 1 to June 15 period? How will this mitigate impacts on populations in subsequent years when these areas have been disturbed?

R-137: The BLM is fully committed to conducting site-specific surveys and clearances and to determining impacts from specific CBM projects when Project Plans are reviewed. Appropriate mitigation measures will be developed and required. Construction activities can be

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precluded as part of the Conditions of Approval under standard stipulations that allow up to a 60-day delay of activities. Additional stipulations can be applied as needed as part of the WMPP, but are not specified at this time.

C-138: Chapter 4, Wildlife, Alternative A, Mitigation, states no mitigation measures proposed for black-footed ferret-listed species.

R-138: Any black-footed ferrets located in project areas would have to be avoided in accordance with the provisions of the ESA. See Biological Opinion, Wildlife Appendix.

C-139: Chapter 4, Wildlife, Impacts From Management Specific to each Alternative: failure to quantify the cumulative impacts of Montana and Wyoming development on any species.

R-139: The EIS states, “Impacts from Wyoming CBM development on wildlife and wildlife habitat would be similar to those described under Alternative A, but at a far larger scale. More than 7.5 times as many CBM wells may be developed in the Powder River Basin of Wyoming than the 18,300 considered under Alternatives B, C, and D. The magnitude of direct and indirect Wyoming CBM impacts on wildlife and wildlife habitat would be about 7.5 times greater than described for Alternatives B, C, and D (described in the following sections). Large areas of riparian habitat would likely be impacted by erosion because of substantially higher flows and by higher SAR levels that are harmful to many plants. Groundwater drawdown would likely dry up many springs and reduce flows or dry up intermittent streams throughout the Powder River Basin of Wyoming and well into Montana. This would result in the direct loss of habitat and degrade habitat values on lands around springs and intermittent streams because natural water sources would be eliminated.”

C-140: Chapter 4, Wildlife, Alternative B: “Sage grouse could be especially hard hit”. What does “especially hard hit” mean?

R-140: It means that among wildlife species impacted by CBM development, sage grouse would be among those most affected. The text has been clarified. Also see R-46 and R-48. Sage grouse will be a very high focus during CBM development because of its present status. See WMPP, Wildlife Appendix.

C-141: In Chapter 4, Wildlife, there are no cumulative impacts from Alternative C because there is no Conclusion section for this alternative.

R-141: A conclusion section has been added to the EIS.

C-142: In Chapter 4, Wildlife, Alternative E, quantify what “potentially less severe” means.

R-142: See **R-1** regarding quantification of impacts.

C-143: In Chapter 4, Wildlife, Alternative E, explain how monitoring will mitigate or avoid impacts on wildlife species and habitat. Define “objectives for wildlife.”

R-143: See the WMPP in the in the Wildlife Appendix for further discussion of how monitoring and adaptive management will be applied to CBM development.

C-144: In Chapter 4, Wildlife, Alternative E, what is meant by “adaptive environmental management principles.”

R-144: See **R-144**. Also, adaptive management is a process of monitoring effects at various landscape scales and modifying future management decisions to reduce or avoid identified impacts.

C-145: In Chapter 4, Wildlife, Alternative E, amphibians and reptiles are not discussed.

R-145: The discussion of impacts of Alternative E refers back to earlier discussions. Therefore, there is no discussion of any specific wildlife groups.

C-146: Chapter 3, Special Status Species states that sicklefin chub and sturgeon chub were petitioned for listing under the ESA, but they were not listed. Where is the analysis of the impacts on the sicklefin chub and sturgeon chub?

R-146: The nature of the EIS does not support detailed analysis of effects to specific species because there are no specific project locations identified at this time. Discussions of specific species under the heading of Special Status Species are limited to federally listed or candidate species. The general effects discussions in the Aquatics section apply to sturgeon chub. The data base will be reviewed for the occurrence of sicklefin chub in project area drainages for assessment in the EIS.

C-147: Chapter 4, Aquatic Resources, Alternative E concludes that “Impacts on aquatic resources associated with Alternative E would generally be comparable to the CBM related impacts described for Alternative B, which emphasizes the protection of natural and cultural resources.” What is the basis for this conclusion?

R-147: Chapter 2 compares the different features of all the alternatives. That table notes the many ways in which Alternative E is similar to Alternative B, and where it is not, BMPs and mitigation measures would be implemented to avoid or minimize the potential for

impacting aquatic resources. The EIS analysis of Alternative E notes the potential for increased sediment delivery as compared to Alternative B because of differences in transportation corridors. Both Alternative B and E are aimed at implementing measures that would avoid water quality degradation and impacts on aquatic resources.

C-148: Reclamation and bonding agreements should clearly guarantee that CBM producers have adequate funds to insure that game species are reclaimed to pre-development populations.

R-148: The BLM's policy requires reclamation of disturbed lands, not restoration of habitats present before disturbance. There is no requirement to specifically re-establish native grasses, forbs, or shrubs, although these species may be included in seed mixes. The EIS states, "The intent of reclamation is to re-establish a vegetative cover on disturbed areas rather than to restore native plant communities, as they existed prior to disturbance. Plant species diversity would be lower on reclaimed sites than before disturbance, reducing overall wildlife habitat values for the foreseeable future. Mitigation measures would not be effective at compensating for the indirect impacts on wildlife." There is no assurance or condition in the bonding agreements concerning wildlife habitat value of reclaimed areas.

C-149: Why are seven of the nine wildlife issues listed on page 1-15 (DEIS) not addressed?

R-149: All of these topics have been addressed in the EIS.

C-150: What is the effect of the CBM water on biota of the streams where it is dumped?

R-150: Potential effects on biota of discharging CBM water to streams are discussed in Chapter 4 in the Aquatic Resources Section of the DEIS. The analysis discusses the potential effects on aquatic habitat and resources from changes in flows, salinity, and TDS of the receiving stream. Several examples are presented that calculate resultant TDS concentrations and expected effects on aquatic life from discharging a given volume of CBM water with specific characteristics to a receiving drainage with a specific flow and specific characteristics. The potential effects vary among alternatives based on operational criteria and according to the nature of BMPs and mitigation measures that would be implemented. For example, some alternatives would treat production water before it is discharged while others would discharge untreated water over the ground surface.

C-151: The DEIS admits that CBM water discharges will render surface waters unsuitable for irrigation (SAR greater than 12) in many drainages, yet the draft EIS fails to disclose that these discharges will exceed numeric standards being proposed by the state and tribe. While the draft EIS acknowledges the direct effects of high SAR water on riparian vegetation and agricultural crops, the document fails to analyze the magnitude, duration, scope or indirect effects of the impact. What will be the consequences to the wildlife and fisheries of the region when riparian areas are negatively impacted.

R-151: Given the nature of this EIS, it is not possible to estimate the magnitude of the impacts on riparian vegetation. However, any impacts of high SAR water would be negative. Riparian communities in shortgrass prairie ecosystems provide essential habitat for a wide range of species and any losses would impact numerous species, including several that are already declining throughout all or a portion of their range. The importance of riparian communities to a healthy aquatic ecosystem is also discussed in the Aquatic Resources Section of Chapter 4. Potential effects on instream habitat and aquatic resources from degraded riparian conditions and function, regardless of the cause, can include: reduced overhead cover; reduced bank stability and cover; reduced recruitment of woody or brushy debris to the stream, which provides fish cover and habitat diversity; reduced external food sources (e.g. insects falling to the water's surface); and warmer water temperatures during summer and colder water temperatures during winter.

C-152: Alternative D under Hydrological Resources states that treated discharge water may affect the temperature of the surface water body receiving the discharge. The effects of this anticipated temperature change are not mentioned in the Aquatic Resources section.

R-152: The potential effects of the possible temperature change resulting from the discharge of CBM water under Alternatives A, C, D, and E have been addressed in the Aquatic Resources section of this Final EIS. There would be no discharge of CBM water under Alternative B.

C-153: It is conceivable that the cumulative effects of cold discharges from CBM wells will affect warm water aquatic systems such as the Tongue River and Powder Rivers. These rivers are home to populations of dwindling native fish species such as sauger, blue sucker and, in their lower reaches, pallid sturgeon.

R-153: The potential effects of the possible temperature change resulting from the discharge of CBM water under Alternatives A, C, D, and E have been addressed in the Aquatic Resources section of this Final EIS.

C-154: How can the effectiveness of these mitigation measures be the same for Alternative A (almost no development—250 producing wells) and Alternative C (18,300 producing wells) without travel corridors or other protections—emphasizing CBM development?

R-154: The effectiveness of a mitigation measure does not depend on the number of wells, but rather on the action being taken. In addition, as noted in the Conclusions section for Alternative C, the types of residual impacts (those impacts remaining after mitigation) that would persist for Alternative C are the same as described for Alternative A, but they would occur on a far greater scale. This is because of the far greater number of CBM wells under Alternative C than Alternative A. The residual impacts of substantially greater discharges to surface waters of CBM-production water also are noted for Alternative C.

C-155: It is expected that impacts on sage grouse in one state will also affect sage grouse in the adjacent state.

R-155: Sage grouse are known to move as much as 100 miles between nesting, rearing, and wintering areas and wintering areas can vary from year to year depending on the severity of the winter. Therefore, you may be correct that impacts on sage grouse or sage grouse habitat in one state could affect sage grouse in another nearby state.

C-156: The DEIS calls for placing “walk-in signs” as a mitigation measure, but the success of such signage is unproven and suspect.

R-156: Although the FEIS includes walk-in signs as a potential mitigation measure implemented by the state, no impacts were reduced as a result of incorporating this concept.

C-157: If prairie dogs are to be restored to viable numbers to avoid listing under the ESA, suitable non-occupied habitat must be available. CBM could preclude such restoration.

R-157: You are correct that CBM development may preclude reoccupation of some suitable habitat by prairie dogs.

C-158: BLM and the State of Montana have signed an agreement to manage sage grouse. This EIS fails to consider an alternative which is responsive to this decline, or which may achieve the obligations of the MOU and the related guidelines.

R-158: The BLM has signed a national MOU with the western state agencies and other federal agencies to agree to work cooperatively for sagebrush and sage grouse conservation.

Distribution List

The BLM requested comments from industries, businesses, individuals, and special interest groups, federal, state, and local agencies and from Native American tribes. Information has been distributed to the organizations, agencies, and individuals listed.

A

Eugene S Aby
Adventures Women Inc
Peter Aengst
Tom Agnew
Roy Alexander
ALL Consulting
Virginia L Allen
William Almy
AM Energy
American Fisheries Society
American Lands
American Wildlands
Jerry Anderberg
Patricia and Ivan Anderson
Donald W. Anderson
Clyde and Sally Angove
Aqua Terra Consultant
Walter Archer
J H Armstrong
Carl Arnatt
James and Alice Arthur
Tom Asay
Clyde Aspevig
Adelaide Astrom
Janice Astrom
Aqua Terra Consultants
Marlyn Atkins
Montie Auer
Aviara Energy Corp
Earl and Betty Aye

B

Darell and Sue Bache
Daniel Bakker
Kenneth K Baldwin
Keith Bales
Dave Ballard
W W Ballard
Ballard Petroleum Holdings LLC
Charles Ballek
Ronis M Ballinger
Banko Petroleum Management
Anne Banks
Tom Bansak

Jim Barngrover
Jeanette Barnes
Barrel Mountaineering
Jim Barrett
Randy and Stephanie Barth
Basin Electric Power Company
Rick Bass
Senator Max Baucus
Tony Baumgartner
Mike and Lisa Bay
Shirley and Robert Bayley
Urban Bear Don't Walk
Beartooth Oil & Gas
Bob Beck
Tony Becker
Sharon Bedford
Benge Ranch Inc
Dan Bennett
Dennis Berklund
Charles Bertsch
Shawn Bettise
Bice Ranch
Steve Bickwermer
Big Horn Conservation District
Big Horn County Commissioners
Big Horn County Planning Board
Big Sky Coal Company
Bill Barrett Corporation
Billings Chamber Of Commerce
Billings Gazette
Billings Gazette - City Desk
Nettemae Binnie
Bison Engineering
Bittercreek Pipeline LLC
Norma Bixby
Brian Bjella
Bjork Lindley Danielson & Baker
BKS Environmental
Black Hills Exploration & Prod Inc
Joanne Blake
Kathleen K. Blehm
BLM Cody Field Office
BLM Buffalo Field Office
BLM Great Falls Field Office
BLM Miles City Field Office
BLM Montana State Office
BLM Oregon State Office
Mike Blum
Bruce H Blumenshine
Mary Bluemle
Howard Boggess
Bones Brothers Ranch
Maryon Border
Christopher Borton
Barbara and Kent Bourbon
Dru Bower

CHAPTER 5

Distribution List

Bowers Oil & Gas Explor Inc
Laura Bowker
R J Boyle
Joseph Brady
Otto Braided Hair
Kerby Brandon
Kim Brandon
Mark Bremer
Brian Creek Cattle Co
Lance and Cheryl Brill
Broadus Chamber of Commerce
Gary Broeder
Michael Brown
Tom Brown Inc
Aaron Browning
Don Brutlag
Buck Mountain Ranch
Bureau of Indian Affairs – Crow Agency
Bureau of Indian Affairs –
Northern Cheyenne Agency
Bureau of Indian Affairs – Area Office
Bureau of Reclamation
Henry Burgess
Scott Burley
Burlington Resources Oil & Gas Co
Shauna Burns
Senator Conrad Burns
Jim Butler
Chuck Buus
Buys Association Inc
William Byxbe

C

William and Maggie Caffyn
Bill Cagle
Steve Caldwell
Bill Campbell
Craig Campbell
John Campbell
Campen Consultants
Camwest Limited Partnership
Anita Canovas
CARDD
Carbon County Commissioners
Caribou Land & Livestock
Isabelle Carlhan
Wayne j Carlisle
Sarah Carlson
S Carpenter
Bob Carroll
Charles Carson
Waylon and Madeline Carson
Donna Carusohirst
Mike Caskey
Casper Tribune

Nona Chambers
Bill Champion
Brian and Lynn Chan
Michael and Hia Chapin
Jim Chase
Kevin Chartier
Steve Chestnut
John Childs
Ramona Clark
William Clarke
Laurie Claypool
Clementine Ranch
Cline Production Co
Richard C Clotfelter
CMS Energy
CNX Land Resources Inc
Connie Cole
Senator Mack Cole
Coleman Oil Gas Inc
Jim Collins
Colstrip Area Assoc of Business
Dwight Conley
Sally and Gary Conner
Stuart Conner
Henry Connor
Jannis Conselyea
Consol Energy Inc
Continental Resources Inc
Anne Cossitt
John Coston
Cottonwood Resource
Randall T Cox
T H Crawford
Deb and Tim Crennen
Luigia Crippa
Senator William Crismore
Jim Cross
Louise Cross
Crowley Law Firm
Crow Tribal Chairman
Crow Tribal Contracts Office
Crow Tribal Council
Crow Tribal Council Chair
Crow Tribal EPA
Crow Tribe
Mark Cunnane
Bill Cunningham
James F Curtis
Custer National Forest

D

Curt Dahlgaard
Jan Dahlgaard
William Dakin
Judy Daniels

Robert Danskin
Karen Davidson
David L Davis
Jerry and Margaret Davis
Dean & Associates Cons
Decker Coal Co
Defenders of Wildlife
J M DeGange
Karen Demaine
Donald Denowh
Debra DeBode
Department of Environmental Science
Department Of Natural Resources & Conservation
Hawley Desimon
Gennie Deweese
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Dee Diedrich
Robin Diedrich
Phil Dinsmore
Curtis L Ditzell
Richard & Clede Dix
Krista Dixon
Bill Dodd
DOI Solicitor's Office
Ben Donegan
Alvin West Donohoe
Dave and Joanne Dorwart
Robert Downey
Lois J Drobish
Pat and John Drumheller
DTM Consulting Inc
Andrew Duke
Sandra Dunham
Jack Dunn

E

88 Oil Company
Ben Earley
Tom Ebzery
EDM Inc
Francis Edwards
Paul Edwards
Stephen Egli
Leonard & Dorothy Ehleng
Elenburg Exploration Inc
Terry Elliot
Elk Point Resources
Elk River Law Office PLLP
Ellsworth Geological
James Emerson
Tom and Ann Emmons
Encore Operating LP
Mike England
Mark Engle

ENSR
Environmental Information Center
Environmental Quality Council
Environmental Protection Agency Montana Off
Environmental Protection Agency Region 8
Equity Oil Co
LeRoy R Erickson
Kirth Erickson
ESN Rocky Mountain
Tom Etchart
Bob Evans
Exodus Inc

F

Judith Fahrnow
Pam Farmer
Pat Farmer
F Shelton Farr
Joseph C Femling
Ron Fenex
FERC
Tom Ferguson
D Fincham
Fidelity E&P
Doris Fischer
Joanne Fisher
Francie and Robert Fisher
Flathead Wildlife Inc
L Dwayne Flinn
Gloria Flora
Mayre Flowers
Tankard Floyd
Flying J Oil & Gas Inc
Ted Flynn
FL Ranch
Dan K and Jeanne Folson
Kate Forsting
Kenneth E Fortney
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Mary Jo Fox
Brenda Fradenburgh
John Fredlund
Charlie French
Vail P Freyer
Mert and Vicki Freyholtz
Clark Fritz
Paul D Fritz
Amy Frykman
Fulton Fuel Co
Les Fuglevand
Elizabeth M Fulton
William M Fulton

CHAPTER 5
Distribution List

G

Galliton County Planning Dept
George Galuska
Ken Gard
Donald A. Garrity
Glenn Gay
Thomas F Geary
GEI Consulting Inc
Georesources Inc
Kathleen George
Charlie Gephart
Polly A Gill
Richard W Gillette
Eugene and Heidi Giordano
Mark Goetz
Golder Ranch
Steven Glow
Martin Glynn
Darrell Goebel
Robb Goodell
Greg Gordon
Gordon Cattle Company
Dave Gorton
Alfred Graesser
John W Graham Jr
Grand Resources Ltd
R J Graveline
Greater Yellowstone Coalition
William Greiner
Greystone
Paul Grigsby
Grouse Inc
Sid & Evelyn Grovenstein
Ben J Gruner
Prudence L Grunkemeyer
James W. Guercio
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Marian Hadzor
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Marvin Hafla
Alrick Hale
Bernard D Hall
Bradley Hall
Brenda Lindlief Hall
Hallmark Adventures Inc
Richard Halstadt
Linda Halsteadacharya
Martin Hamilton

Robin L Hamilton
Earnest Hammer
Beverly K Hancock
Hancock Enterprises
Norma Hanks
Joseph W Hanna
James N Hannah
Carol A Hansen
Marian Hanson
Becky Hardey
Hardin Chamber Of Commerce
Diane Hargreaves
Scott Harmon
Donald Harr
Harrington Bibler
Gray Harris
John Hart
Bonnie Hash
Kevin Harvey
Steven Hawley
Headington Oil Company
Laura & Jim Heck
Joseph J Hegel
Oscar L Heinrich
George Heliker
Dave Helvey
Patricia Helvey
Pat Hennessey
Henry Malley Memorial Library
Cy Hentges
Lawrence and Mary Lou Heppner
Bucky Heringer
Barry C. Hessenius
Hidden Valley Ranch
Kathryn Hiestand
Susan Hills
Steve Hlebichuk
Bert Hoatman
John Hodnik
Margaret Hofacker
Alvin and Dena Hoff
Paul Hoff
Richard L Hogan
Earl Hogge
Thomas K. Hohn
Holland Hart
Laura and Brett Holmquist
Holmes Ranch
Gary Holsan
Homestake Oil and Gas Company
Jodi Hubbard
William R Hubber
Shirley Hudson
Nicholas M Hughes
Alice and Jay Frank Huller
Raso Hultgren

Gary Huntscovy
Greg and Rachel Huntscovy
Jeff Hunt
Ted Huss
William Hutchison
Bonnie Hyattmurphy
Hydrometrics Inc

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Independent Petroleum Association
Industrial & Energy Min Bureau
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Inman Real Estate
Integrated Weed Service
IPAMS
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Nellie Israel
Neil and Rosemary Isto
Jerry Iverson

J

JA Rohn Consulting
Ralph A Jackson
Reuel G Janson
Blaine Janz
Phil Jaquith
Clyde Jarvis
Gerry and Chuck Jennings
Robert E Jewell
Bruce Jodar
Ann Johnson
Debra Johnson
Jewellene Johnson
Penny Johnson
Robert Johnson
Tamara J Johnson
Johnson, Grassel & Gorham Llc
Robert Johnston
Curt Jones
James W Jones
Patrick D Jones
Sonja C Jones
Steven Jones
JM Huber Corporation
Robert A Jordan
Gayle Joslin
Patrick Judge
Jeff Juel

K

Beth Kaeding
Ken Kamon

Herb Kane
Brad Kant
C G Katselas
Van P Keele
Keesun Corp
Joe Kehl
Cynthia Keller
Kennecott Energy
June Kennick
Robert Kensinger
Paul and Vicki Kent
Richard Kent
Keith Kerbel
John Robert Kerns
Key Production Company
Mollie Kieran
Tami Kimball
Sandy Kindt
Cynthia Kingston
Klabzuba Oil & Gas Inc
Bruce Kline
Karson Kluver
Joseph W Knotek
Lars Knudson
Bob Kober
Lee Racheal Kosnik
Tony Kowis
Carmen Kraft
Marilyn Krause
Delores Krieger
KTVM TV
Janelle Kuechle
Frank Kuehn
Joe Kurkowski
Brian Kurth
Caroline Kutrz

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Maryvette Labrie
J LaClair
Ken & Marcia Lane
John Langstaff
Barbara and Stirling Lantz
LAO Environmental
Mark Larsen
Vince Larsen
Anders and Laura Larson
Julie Larson
Jack and Pat Larmoyeux
Dave Larsen
Vince Larsen
Dale Lawrence
Thomas K Lawson
Don R. Lee

CHAPTER 5
Distribution List

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Frederick Lefthand
Philip N Lehner
Ralph Lenhart
Peter Lesica
Evangeline LeVeque
Stuart Lewin
Ellen Lewis
Stephen and Meredith Lewis
Little Big Horn College
Dean Littlepage
Livingston Enterprise
Alan Lloyd
James F Logar
Conrad Anker and Jennifer Lowe
Carey Lowell
Marian Cotton Lower
Lower Brule Tribe
Darrell A. Lowrance
Paul Luehrmann
Stanley Lund
Eric Lunde
Cathy Lungren
Tom Luoma
Luther Appraisal Services
Willard & Shirley Lybeck
Daniel and Marilyn Lynn
Nancy Lynne

M

M & K Oil Co Inc
Mike Machler
Beth MacConnell
Barbara Macioroski
Colleen Mackcanty
Macum Energy Inc
Magic City Fly Fisher
Earl Mainwaring
Max A Makich
Joyce & Monte Malley
Johnathon Malo
Betty Lou Mann
Lillian Manry
Marathon Oil Company
Cynthia Marble
Bob Marosok
Robert Marshall
Katie Marske
P C Martens
Brian Matz
Kay K McAllister
Mari McCann
K W McCaskill
Michael McClary
Jimmy McClure

Roy and Susan McClure
Dave McCoskery
Clayton McCracken
Angela Mc Dannel
Allen Mc Droo
Laurence and Carol McEvoy
Richard M McKay
Tom McKerlick
Margarita McLarty
William C McLaughlin
Janet McMillan
Warren A. McMillan
Doug McRae
Wally McRae
McRae & Henry Ltd
Laura V Meller
Walter Merschhat
Matthew Meyer
Christine Michaels
Tim Michelsen
Miles City Chamber Of Commerce
Miles City Star
Bonnie Miller
Keith Miller
Susan L Miller
Miller Cattle Company
Minot State University
Bobbie J Mitchell
Patrick Miranda
Miratech Corporation
J. R. Mitchell
Irene Moffett
Marlin Mogan
Craig Mohr
John V Molenar
Hope M Mommer
Joan Montagne
Montalban O&G Op Cbm Bldg
Montana Coal Council
Montana Dakota Utilities
Montana Department of Environmental Quality
Montana Department of Natural
Resources & Conservation
Montana Department of Transportation
Montana Farm Bureau District 5
Montana Farmers Union
Montana Petroleum Association
Montana River Association
Jim Moore
John Morrison
Mountain Pacific General Inc
MSE Technology Application
MSU Billings
Mt Assoc of Counties
Mt Assoc of Petroleum
Mt Bureau of Mines & Geology

Mt Chamber of Commerce
MT Council of Trout Un
Mt DNRC Water Resources Div
Mt Environmental Quality Council
Mt Farm Bureau Federation
Mt Fish Wildlife & Parks
Mt Petroleum Association
Mt Public Lands Council
Mt State Historical Preservation Office
Mt State Parks Assoc
Mt Wildlife Federation
Molly L Munro
Robert G. Munson
David Murnion
Don and Gayle Murray
Jeff Mussleman
Amy Myran

N

Nance Petroleum Corp
Stewart Nash
Sherri Nassar
National Park Service
National Wildlife Federation
National Wildlife Society
Native Action
Gerald Navratil
Karin Neff
Carl Z Newtar
Nicklin Earth Water
W J Nicholls
Dan Nichols
Robert Nimmick
E T Nobles
Thomas C Noreen
Nancy Norsby
North American Grouse PA
North Western Energy
Northern Cheyenne Chamber of Commerce
Northern Cheyenne Cultural Committee
Northern Cheyenne Tribal Chair
Northern Cheyenne Tribal Consultant
Northern Cheyenne Tribe
Northern Montana Oil & Gas
Northern Oil Production Inc
Northern Plains Resource Council
Northern Pump & Compression
Northern Rockie Regional Off
Northern Wyoming Systems
Northstar Gas Co
Richard J Norton
Earl Norwood
Nancy N Norvell
Jack P Novosel
NRCE

NRCS
Kathy T Nygaardlange

O

O&G Environmental Consulting LLC
Roy Oconnor
Ocean Energy Resources Inc
David Odt
Office of Surface Mining
Sam Ohlson
Oilgener
Neta Old Elk
Keith High and Jennifer Oloughlin
Alan Olsen
Daniel L and Eric Olsen
Heather S Olson
Jeanne E Oneill
Rita Oneill
Steve Orr
Harold Ort
Ken Osborne
Leo R Ost
Richard Osterman
Loren J. O'toole
Dan and Shauna Ottman
Joe Owen
Peggy M Owens

P

Padlock Ranch
Julia Page
Mary E Pannell
Jean Parker
John A Parodi
L Arlie Paschke
Spencer Parsons
Steve Paulson
Peabody Development Company
Peabody Group
Peabody Natural Gas LLC
Moriah Peck
David L Pengelly
Pennaco Energy Inc
David Percival
Permitco Inc
Permits West
Charlene Perry
Robert S Pfeiffer
Ellen Pfister
Jim Phelps
George Pilgrim
Gil Jordan and Kim Pinter
Margaret Pittendrigh
Jeffery Phillips

CHAPTER 5

Distribution List

E G Pittman
Frankie and Linda Planichek
Peg Platt
Susan Plath
James Poell
John Poire
Robert W Pond
Portage Environmental Inc
Cherry Porten
A. Hayden Porter
F. Porter
Pamela Poulsen
Powder River County Commissioners
Powder River Gas LLC
Powder River Conservation Dist
Powers Energy Corporation
Dorothy L and Dwight Preston
Preston Reynolds & Co Inc
Kris Prinzins
Public Lands Advocacy
Public Lands Access Assoc
Public Lands Foundation
Pumps Plus

Q

Quaneco LLC
Quicksilver Resources Inc

R

Chuck Raches
Kathleen A Ralph
Eric Ramsey
Paul Rana
Kathe Randle
Ranck Oil Co
David Ravenport
Ranger Review
J R and Pat Rasmussen
Wyndy Rausenberger
Jennifer Read
W G Redfield
Roland Redmond
Steve and Bob Regele
Jane Reger
Representative Dennis Rehberg
Allen Rein
Shirley and Joe Renders
Resource Advisory Council
Richard Reynolds
Rhea Joy Lewis Tribe
Jessica Rhoades
Calvin Rice
Eldon Rice
Nathan A and Janet Rice

RN Rice
Gail and John Richardson
William R Richter
Robert E and Tomi Rickels
Anna Marie Rider
Gregory L Ridu
Paula Riesch
Burr Riesen
Chris Riley
John Riley
Rimrock Oil Co
Ritter Laber & Associates
Raymond Rizor
RN Rice
Terry Roach
Brian Roat
Robert Hawkins Inc
Kathy Roberts
Richard and Janet Roberts
Ernie Robinson
Major Robinson
Phillip and Carrie Robinson
Rocker Six Cattle Co
Rocky Mountain Environmental
Rocky Mountain Exploration
Rocky Mountain Oil Journal
Rocky Mtn Oil & Gas Assoc
Jean Roll
Roy L Roney
Lucille and Peter Ronning
Alison and Alicia Rose
Rosebud Conservation District
Rosebud County Commissioners
Rosebud County Extension Office
Rosebud Power Plant
Rosebud Protective Assoc
Rosebud/Treas Wildlife Assoc
Gloria Rosencranz
Nigel M Ross
G M & Marge Rossetter
Shawn Rost
Steve Ruffatto
Roughrider Power
Rupestrian Cyberservices

S

Doug Saarel
Norman Sahn
David W Salo
Samedan Oil Corp
Samson Resources Company
Sands Oil Co
Ron Santi
Robert A Schalla
John Scheffelbein

Lee Scherer
Ted Schmidt
Tom Schneider
Peter Schoonmaker
R K Schraiter
Frank Schrater
Stephen Schreck
Franklin E Schroeter
Catherine Schuck
Nate Schulfer
William Schwarzkoph
Timothy and Karen Scott
Doris Seaman
Susan Seibert
Robert Semrow
Frank Sennott
John T Senrud
Jim Shaffer
Shane Creek Ranch
Herbert Sharbono
Arlo and Darlene Share
Mike Shenk
Colleen Shumway
Sheridan Chamber Of Commerce
Sheridan County Commissioners
Sheridan County News
Sheridan County Planning
Roger and Susan Sherman
Kenneth and Ann Shesne
Sierra Club
Roxanne Simpson
Erica Skinger
Stanely and Cecella Slater
Gail Small
Geri Small
Smith-Foster
Annick Smith
Christine Smith
Duane Smith
E Neil Smith
Jean E Smith
John and Judith Smith
Joe S. Smith
Keith Smith
Mike Smith
Phil and Debbie Smith
Darren Snow
Don Snow
Soap Creek Assoc Inc
Jeanne Souvigny
Spectrum Energy Inc
Spring Creek Coal Company
Kathy Standard
Harold Stanton
St. Oil Company
Douglas Stange

Bob Stanhope
Steigers Corporation
Vickie Steiner
Judy Stephenson
Bob and Hope Stevens
David and Nike Stevens
Stillwater Protective Assoc
Judy Stolzenburg
Robin Stout
Ernie Strum
John & Fay Stuker
Stephen J Stutebach
Maritn Suda
Greg Sullivan
Paul Sunblad
Suncor Energy
Swanson Drilling Company LLC
Robert Swinehart
Marlene Swisher

T

T&Y Irrigation
Todd Tanner
Ron & Twila Jo Talcott
Tarter Family Trust
Margaret Taylor
Norman E and Mary Taylor
Watty & Lila Taylor
Tegra Energy Services
The Ecology Center In
The Institute for Environ An
The Prosp Invest & Trad Co Ltd
Michael Thomas
Wayne Thompson
Three Bar Ranch
Greg Thurow
Pam Tierney- Crisafulli
Tomahawk Oil Co
Robert Tomich
Wayne Tomicich
Tongue River Farm
Lee Torgrimson
Pat and Dick Tourangeau
Deon Trangmoe
Treasure County Commissioners
Treetop Ranch Ltd
Bill Trumble
John Tubbs
Pat Tucker
James A Tuma
Thomas P Tuminello
Larry Tveit Sr
Hubert Two Leggins
Anne Trygstad
Jack Tuholske

CHAPTER 5

Distribution List

Marvin and Joanne Twiss
Scott Tyler

U

U S EPA Region 8 Library Serials
US Geological Survey
Gary Unruh
US Department of Interior Fish
US Fish & Wildlife Service
US Geological Survey
USDA Forest Service
USDA – NRCS
Matthew Utnik

V

Valley Nursery
Rick VanAken
Mary Vandenbosch
Steven Vanfossen
Den VanPolsen
Willy VanStraten
Fred Vanhorn
Robert Varner
George Vaught Jr
Joel G Vignere
Virginia Vincent
Alfred and Deanna Visborg
Robin Vogler
Bette Vonhess
Hal Vosen

W

Bill Wagner
Pat Wagner
Sara A Wagner
Verna Wagner
Bob Waldron
Harry Wallace
Stephanie and Ken Wallace
Glenn Waller
Jim Walseth
Richard Waltner
Mike Wamboldt
David Warburton
Russell Warchola
Bernt Ward
Washington Department of Ecology
John Watts
Donna J Watson
Rebecca W. Watson
WBI Holdings Inc
Jeff Weber
Jack A Webster

H A Webster
Wesco Resources Inc
Westech Environmental Services
Westport Oil & Gas Co Inc
Jay Westre
Michael Wheat
Judith Wheeler
Gordon and Janet Whirry
Luella White
Neil Whitehead
Mrs Leslie Wickland
Wicklin Earth & Water
Chuck Wideman
Ed Wierzbicki
Phyllis Wilcox
Peter T Wilczynski
Robert Wilkes
Burt Williams
Dale & Janie Williams
Roger Williams
Williams Production RMT Company
Lianne Williamson
Williston Industrial Supply Corp
Willy's Petroleum
Richard Wilmont
John Wilson
Kemp J. Wilson
Randy Wold
Robert E Wood
Arlan Woods
Evan and Cindy Woolston
Mary Wyman

Y

Yellowstone County Commissioners
Yellowstone County Weed
Yellowstone Public Radio
Yellowstone Valley Audubon Society
Denzil R. Young
Hildie Young
Richard C Young
Ken and Jenny Younger

Z

Scotty and Claire Zion
Mike Zmudzinski
Tom Zook
Sarah Zuzulock
Leo Zwemke

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Sandra Brooks: Billings Field Manager

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Fred O'Ferrall: Miles City Assistant Field Manager, Minerals

Dale Tribby: Miles City Supervisory Natural Resource Specialist

Fred Wambolt: Miles City Supervisory Natural Resource Specialist

David Jaynes: Billings Assistant Field Manager

BLM Coordination Support and Review

Montana State Office, Miles City Field Office, Billings Field Office and BLM Wyoming staffs:

Division of Lands and Renewable Resources

Division of Mineral Resources

Division of Administration

State Team

State Core Team

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Monte Mason: Minerals Management Bureau Chief, State Owned Lands and Minerals.

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David Winter: Biologist, ALL Consulting, St. Louis, Missouri.

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Bureau of Indian Affairs

Crow Tribe

U.S. Environmental Protection Agency

U.S. Department of Energy